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Open Access Publishing: A Literature Review



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TABLE OF CONTENTS

TABLE OF CONTENTS	3
SUMMARY	7
Open Access Publishing and Digital Enlightenment.....	7
Structure and Methodology	8
Findings	9
Research Gap I: Historical Perspective	10
Research Gap II: Copyright Protection and Theory	11
Research Gap III: Economics and Business Models.....	12
III.1. Open University, Open Education and Open Educational Resources	12
III.2 Academic Scholars, Reputation, Prestige and Careers.....	12
III.3. Academic Publishing Market	13
III.3.1. Competition.....	13
III.3.2. Cost of Closed Access	13
III.3.3. Article Processing Charges	14
III.3.4. OA Book Publishing	14
Research Gap IV: OA Mandate Policies	15
IV.1. Compliance and Enforcing Mechanisms	15
IV.2. Academic Freedom	15
IV.3. Rationale for OA Book Publishing and Mandate Policies.....	16
PART 1 – HISTORY AND THEORY	17
Abstract	17
1.1 <i>Scientiae Donum Dei Est Unde Vendi Non Potest</i>	17
1.2 The Road to Propertisation	23
1.3 The Return of Open Access	24
1.3.1 Free/Libre and Open Source Software	30
1.3.2 Creative Commons	33
1.3.3 Wikis and Wikipedia	36
1.3.4 Open Science, Science Commons and Open Patenting	40

1.4 The Open Access Movement.....	44
1.4.1 The Three Bs: Budapest, Berlin and Bethesda	49
1.4.2 SPARC and Civil Society	52
1.4.3 OA Publication Models: Green, Gold, Gratis and Libre	53
1.4.4 OA Publication Channels	55
1.4.4.1 OA Repositories.....	55
1.4.4.2 Open Access Journals	59
1.4.4.3 Open Access Books.....	61
1.4.5 Open Access Publishing in the STEM Subjects	62
1.4.6 Open Access Publishing in the Social Sciences and Humanities	66
1.4.6.1 SSRN, RePEc, BEPress and JSTOR	66
1.4.6.2 Open Access to the Law and Legal Scholarship.....	70
1.5 From ‘Elite-ment’ to Open Knowledge Environments	75
1.5.1 Universities and Open Access	76
1.5.2 Open University and Open Learning	77
1.5.4 Open Knowledge Environments.....	81
1.6 Conclusions.....	82
PART 2 – LEGAL FRAMEWORK AND COPYRIGHT	83
Abstract	83
2.1 Copyright/Access Tensions.....	83
2.1.1 Copyright Extension and Expansion	84
2.1.2 Fair Dealings, Digital and Contractual Locks.....	86
2.2 Copyright and Scholarly Publishing	90
2.2.1 Copyright Rationale in Academic Publishing.....	91
2.2.2 Ownership of Rights in Academic Publishing	93
2.2.3 Transfer of Rights in Academic Publishing	95
2.2.4 Open Access and Licensing.....	96
2.2.5 Economies of Prestige, Academic Careers, and OAP	100
2.2.6 Recalibrating or Abolishing Copyright for Academic Works?	103
2.3 Open Access, Developing Countries and Scientific Divide	106
2.4 Conclusions.....	113
PART 3 – THE ECONOMICS OF OPEN ACCESS AND EMERGING BUSINESS MODELS	115
Abstract	115

3.1 The Economics of Academic Publishing	115
3.2 Academic Publishing Industry	117
3.2.1 Pricing Models, Inelastic Demand and Market Inefficiency	119
3.3 Digitisation and OAP.....	127
3.4 Open Access Business Models.....	130
3.4.1 Repositories.....	131
3.4.2 Journals.....	132
3.4.2.1 Volunteer Effort.....	133
3.4.2.2 Publication Fees	133
3.4.2.3 Hybrid OA	139
3.4.2.4 Institutionally Subsidised OA.....	140
3.4.2.5 Fund-raised OA.....	141
3.4.2.6 Other OA Journal Business Models	142
3.4.3 Books	143
3.4.3.1 Dual-edition Publishing	145
3.4.3.2 Collaborative Underwriting	145
3.4.3.3 Fund-raised OA.....	146
3.4.3.4 Other OA Books Business Models	147
3.5 Assessing the Value/Metrics of OAP	148
3.5.1 Economic Impact of OAP	148
3.5.2 Citation Advantage	150
3.5.3 Research Impact	155
3.5.4 Quality of Research and Peer Review	157
3.6 Conclusions.....	161
PART 4 – OPEN ACCESS PUBLISHING POLICIES	164
Abstract	164
4.1 Open Access Mandate Policies – An Overview	164
4.2 United States and NIH Policy.....	169
4.3 Europe and Horizon 2020.....	172
4.4 United Kingdom.....	174
4.4.1 Finch Report	175
4.4.2 Governmental Response and Other Open Access Projects	178
4.4.3 RCUK	179

4.4.4 HEFCE.....	181
4.5 Evaluating the Effects of OA Mandate Policies	182
4.6 Conclusions.....	186
BIBLIOGRAPHY	187
A. Articles, Books and Reports	187
B. Legislation	215
i. Europe	215
ii. United States	216
C. Official Documents	216

SUMMARY

Within the context of the Centre for Copyright and New Business Models in the Creative Economy (CREATe) research scope, this literature review investigates the current trends, advantages, disadvantages, problems and solutions, opportunities and barriers in Open Access Publishing (OAP), and in particular Open Access (OA) academic publishing.¹ This study is intended to scope and evaluate current theory and practice concerning models for OAP and engage with intellectual, legal and economic perspectives on OAP. It is also aimed at mapping the field of academic publishing in the UK and abroad, drawing specifically upon the experiences of CREATe industry partners as well as other initiatives such as SSRN, open source software, and Creative Commons. As a final critical goal, this scoping study will identify any meaningful gaps in the relevant literature with a view to developing further research questions. The results of this scoping exercise will then be presented to relevant industry and academic partners at a workshop intended to assist in further developing the critical research questions pertinent to OAP.

OPEN ACCESS PUBLISHING AND DIGITAL ENLIGHTENMENT

The philosopher of science Helen Longino argued that ‘the social [dimension of knowledge] is not a corrupting but a validating element in knowledge’.² John Willinsky builds upon this argument by noting that ‘the global scale of knowledge’s circulation is critical to its very claim as knowledge’.³ Therefore, any constraints to knowledge’s circulation undermine its creation as well. This study tells the story of these constraints and how they have promoted a global reaction to enhance OA to knowledge generally and OAP to academic research and scholarship in particular. In a momentous speech at the European Organization for Nuclear Research (CERN) in Geneva, Professor Lawrence Lessig reminded the audience of scientists

¹ OAP is sometimes conflated with Open Publishing (OP), and sometimes understood as a notion that falls under the larger category of OP. However, the relationship between the two concepts is complex. OP is best conceived as an editorial process that is transparent to the readers. Similarly to open software, OP emphasises collaboration practices among a massive base of peers. Typical examples of OP include Wikipedia, YouTube and blogs. See, for example, Caio M. S. Pereira Neto, ‘Online Collaborative Media and Political Economy of Information - A Case Study’ (2003) 21 J. Marshall J. Computer & Info. L. 511; John Cahir, ‘The Withering Away of Property - The Rise of the Internet Information Commons’ (2004) 24(4) OJLS 619. In itself, OP does not require the absence of economic or permission barriers as OAP does. Conversely, OAP does not require specific transparency in the editorial process or collaborative practices of content creation.

² Helen Longino, *The Fate of Knowledge* (Princeton U Press 2002) 122.

³ See John Willinsky, *The Access Principle: The Case for Open Access to Research and Scholarship* (MIT Press 2006) 34 <http://mitpress.mit.edu/sites/default/files/titles/content/9780262512664_Download_the_full_text.pdf> accessed 27 January 2013.

and researchers that most scientific knowledge is locked away from the general public and can only be accessed by professors and students in a university setting. Lessig pungently made the point that ‘if you are a member of the knowledge elite, then there is free access, but for the rest of the world, not so much [. . .] publisher restrictions do not achieve the objective of enlightenment, but rather the reality of “elite-nment”’.⁴ In this respect, the path to digital enlightenment seems to necessarily pass through OA to scientific knowledge.

STRUCTURE AND METHODOLOGY

In looking at how this path to digital enlightenment is being traced in recent times, one of the challenges that this study had to face has been the massive amount of literature that has been produced on the subject in recent years, especially in the last decade, spanning the entire field of academic research, from the natural sciences to the humanities. In other words, a scoping study and literature review on the subject of OAP is challenging because the topic represents a quintessential example of an interdisciplinary subject that may potentially trigger the research interests of any academic researcher willing to investigate the role that OAP may have in his or her field of research. In fact, this is exactly the state of the literature that has emerged in the past two decades. Since the advent of the first OAP experiments in the early 1990s, natural scientists, social scientists, economists, librarians and legal scholars have contributed to the debate providing insights – or promoting practical experiments themselves – from their sector-specific angle. In light of this consideration, it is easy to understand that a comprehensive review of the OAP literature – and the theoretically connected literature discussing the broader OA movement – is a goal that is extremely hard to achieve.

Mindful of these difficulties, we have nevertheless strived to provide a broad map of the OAP literature and the critical issues that this literature has underlined. We have attempted to highlight the core literature, projects and business models that span a very diversified array of scientific fields, hopefully avoiding – or at least limiting as far as possible – any prejudicial emphasis on literature originating from a specific field. Indeed, this study has been carried out by legal scholars based at the law department of the University of Nottingham, within the general framework of CREATE’s scope and focus of research. The training and educational background of the authors of this work have undoubtedly influenced the overall structure and selection of relevant topics of this study. Conscious of this unavoidable bias, we hope, however, that the study may still be able to reflect the many different voices that have reviewed the topic of OAP.

⁴ See Lawrence Lessig, ‘The Architecture of Access to Scientific Knowledge: Just How Badly we Have Messed This Up’ (speech delivered at CERN Colloquium and Library Science Talk) (April 18, 2011), <<http://cdsweb.cern.ch/record/1345337>>.

This study has been structured in four sections. The first section has a broader scope, serving also as an introductory background to the discussion that follows in the remaining sections. It details the history and theory of OAP, together with a review of the main definitional issues surrounding the topic. At the same time, the first section also aims to contextualise the OAP movement within the broader OA movement and the many projects, such as free and open source software, Creative Commons, Wikipedia or open patenting, that have emerged as part of innovative networked peer production ethics. Sections two and three tackle issues concerning the legal framework within which the OAP debate is located and the economics of OAP. In particular, the tension between the present copyright system and OAP is discussed in Section two, with special emphasis on the rationale and incentive for copyright protection in academic research. Again, Section two tries to frame the OAP debate within the international Access to Knowledge (A2K) debate and the educational divide between developed, developing and emerging countries, by reviewing the relevant literature that has discussed this conundrum. Section three looks at the economics of academic publishing and the emergence of OAP within these economics and market constraints, both from an historical standpoint and by reviewing the several business models that have emerged in the domain of online repositories and journal and book publishing. This third section has also focused on the predominantly economic literature that has discussed the value and metrics of OAP, especially in terms of research impact, citation advantage, quality of research, and peer review process of OAP. Finally, the last section of this study provides a brief overview of the emergence of OAP mandate policies, which seem to be increasingly implemented by universities, funder institutions and governmental bodies as an instrument to foster a globalised free distribution of knowledge and overcome the resistance that the traditional mechanics of academic publishing may pose to this goal.

FINDINGS

As a result of this broad overview of the OAP literature, we have highlighted a number of research gaps that should serve as guidance for future research on the topic. Although, as mentioned above, literature discussing OAP is plentiful, the subject is still in its early stages of development and additional research is needed in several directions. As a preliminary comment on the mass of literature in question, we note that, also as a consequence of the extremely diverse research interests on the subject of OAP – which may be mostly unrelated to the specific research training or expertise of the author – the literature may tend to be repetitive and focus on broad ethical issues. At times, especially in early scholarship, there is too much rhetoric in the OAP movement's arguments that seems to overlook the standard well-established copyright rationale. Arguments emphasising the need for OAP on the basis of the responsibility of scholars because of the impact of their research subjects on the daily lives of the public have been frequently put forward. These arguments are unsatisfactory, especially if they do not carefully take into consideration the justifications that copyright

theory has brought about for providing exclusive rights to authors. In this respect, these arguments may be easily dismantled by 300 years of copyright literature, which justifies protection through either natural rights or incentive theory. A point that should never be ignored is that copyright protection is a legal tool that empowers authors, not publishers. In fact, historically, copyright law has emerged as a reaction to the monopolisation of culture by publishers. Given all the unsatisfactory consequences of a process of overexpansion of exclusive rights over intellectual outputs which tend to be increasingly vested in intermediaries rather than authors, copyright protection still locates its basic rationale in an incentive for authors to create for the enjoyment of the public or in a natural right that provides authors with the fruits of their labour, therefore making them free from any external control. Therefore, it should always be emphasised that OAP can only be promoted through firm economic arguments sustaining an incentive for authors to make their works free and open to the public.

Again, as another preliminary comment, it is worth noting that diverging views seem quite rare in the literature, at least as far as the basic tenets of the debate are concerned. Besides the increasing emergence of views questioning the so-called OA advantage,⁵ there is general agreement of the need for embracing OAP as an instrument of enhanced democratisation and an opportunity to rapidly speed up the process of knowledge creation. Although the democratic value of OA in academic publishing and circulation of knowledge seems at first sight quite undisputable, more nuanced views would still probably be welcome. So far, the academia seems to have embraced OAP as a panacea for all the evils of commercial academic publishing, but a serious consideration regarding the way in which OAP is going to change academic mechanics, especially in the domain of academic careers, promotion and reputation, still seems to be necessary and so far not fully achieved. Also, it seems that the literature hardly makes any distinction between publicly funded and privately funded universities and research or with regard to partially public and partially private universities. These distinctions are certainly worthy of more specific investigation.

Besides these general annotations, we have laid out below a few specific research gaps that in our opinion would be worthy of additional investigation.

Research Gap I: Historical Perspective

I.1. Looking at OAP from an historical perspective is an exercise only partially completed by the literature and more investigation may be opportune. As we have tried to briefly show,⁶ the idea of OA to scholarly knowledge has deep roots in human history. Although the recent history of ‘open science’ has been reviewed and put into correlation with the modern OA

⁵ See infra Section 3.5.

⁶ See infra Section 1.1.

and OAP movement, no literature has investigated the long pre-enlightenment tradition that from Plato to the mediaeval proverbial dictum '*scientia donum dei est unde vendi non potest*' has seen knowledge as a gift to share or, in Erasmus of Rotterdam's words, that 'friends hold [. . .] in common'. In particular, how that tradition has transitioned into the 'open science' movement that emerged in the seventeenth century may be worthy of investigation, as this historical transition has not as yet been elucidated. Broadly, this strand of research may constitute a useful analysis to strengthen foundational arguments in favour of OAP for scholarly research.

I.2. Again, besides the neglected review of the pre-enlightenment tradition, further discussion of the historical and cultural linkage between the 'open science' and modern OAP movement would also be welcome. Reference to the relationship between the two movements is provided by some literature but more specifically dedicated studies would constitute a useful resource. Finally, review of the historical triangulation between open science, learned society and OAP may be a meaningful field for additional research in order to understand the historical evolution, and the reasons, that have led learned societies to derail from the stricter open science ethos and forge an alliance with commercial publishers, which have propelled in part some of the hurdles that the academic community itself has been facing with the 'serial crisis'.

Research Gap II: Copyright Protection and Theory

II.1. Literature has investigated at length the sustainability of the traditional copyright rationale in light of the specific economics of academic publishing. In general terms, it has found that economic incentive is negligible for academic authors. In this respect, however, it may be worth further reviewing differences between academic outputs. For example, textbooks are more lucrative than other research outputs, such as monographs or articles, and authors may not embark on those research projects solely on the basis of a reputational incentive. For some types of publications, the economic incentive may be important for academic authors. Therefore, the circumstances in which the economic incentive becomes relevant for academic authors should be more carefully reviewed by the literature. These circumstances may in fact turn out to be scarcely relevant for publicly funded research, which is the key concern triggering OA mandate policies; however, the literature should try to differentiate between research outputs in order to clearly define what should be covered by OA mandate policies and what should not.

II.2. The OAP movement has placed special emphasis on Creative Commons (CC) licences as a tool to promote more unrestricted circulation of scholarly knowledge, and in particular on the CC-BY licence allowing any use provided that attribution is given. CC-BY has been endorsed by several OAP initiatives and recently also by governmental and research funders' OA mandate policies. However, concerns have been raised about the adequacy of

mandating CC-BY licences. In this respect, additional literature may devote specific attention to reviewing the issues surrounding these concerns.

Research Gap III: Economics and Business Models

The next set of research gaps may be loosely related to the economics of OAP and the business models of the academic market players. These research gaps look at business models from the perspective of the university, the individual academic, and the publisher.

III.1. Open University, Open Education and Open Educational Resources

Together with OAP, the promotion of Open Education (OE) and Open Educational Resources (OERs) is also gaining momentum, especially in connection with the pressing need to provide a solution to the scientific and educational divide between the global North and global South. Also, the global emergence of Massive Open Online Classes (MOOCs) has further increased the level of attention given to OE and OERs. In light of the consideration that the next challenge for OAP may be its integration within the university environment, additional research would be welcome discussing how to correlate the OAP movement to the OERs movement. There does not seem to be any specific literature dealing with this interaction. In particular, special emphasis should be given to advanced discussion of the integration of OAP business models into OERs projects.

Studies looking at the implementation of OAP models in support of MOOCs' projects and platforms, bearing in mind the specificities of these projects, would constitute a natural advancement of the research in the field. Generally speaking, there seems to be little serious literature investigating the reality of MOOCs and none looking at the connections between MOOCs and OAP.

Furthermore, the study of the interaction between OAP and OERs is especially relevant in the domain of OAP for books, most of the course materials being in the form of books. It is worth noting that course books are often learned compilations of previous knowledge, whose shell of copyright protectability may be thinner than in the case of other works, which may render any rationale for strong copyright protection even weaker and even add additional strength to the promotion of OAP in this field. The sought literature may readdress the investigation of sustainable OAP business models for books towards the provision of courseware materials in an OE environment, with special emphasis on how these business models should be integrated within the university setting.

III.2. Academic Scholars, Reputation, Prestige and Careers

One of the biggest conundrums surrounding the OAP debate, which often seems not to be highlighted sufficiently by most literature, is the logical connection between scholarly

authors' incentive to creation, academic reputation and prestige, scientific journals' impact factor, and the academic road to tenure and promotion. The analysis of the interaction between these variables seems a very relevant line of research that may prove critical for strengthening or weakening any arguments discussing the sustainability and broader adoption of OAP models. In particular, besides a general overview of these notions within the context of OAP, studies may be welcome in defining roadmaps and solutions to adjust the emergence of OAP to academic procedures, policies and standards in the field of academic career. Again, in close association with the sought investigation mentioned above, research should also look at the effects of OAP on new entrants in the academic markets, in light of part of the economic literature that seems to suggest that OAP may have more beneficial effects for well-established and super-star academic authors than for others.

III.3. Academic Publishing Market

Although deeply investigated by the literature, there is still the potential for lines of research in connection with the economics of the academic publishing market and its interaction with emerging OAP business models.

III.3.1. Competition

One research question that may profit from more investigation is that of the interface between competition law and the monopolistic nature of copyright in the academic publishing market. Specific studies should look at the sustainability from a competition law standpoint of the escalating prices in the academic publishing sector, with special emphasis on reviewing the reasons and rationale for allowing mergers and acquisitions in this already very concentrated market. Also, in connection with the review of anti-competitive practices, one point that may be worthy of more investigation – and, according to Willinsky,⁷ is missing from the current economics of OA – is a more exact accounting for pricing differences by commercial publishers and other academic publishers. Hence, literature should also review how OAP business models may or may not change the present market dysfunctions, projecting whether the competition equilibrium will be enhanced or worsened by OAP and again investigating whether certain business models would be better than others to address this monopoly power problem.

III.3.2. Cost of Closed Access

Some authors have noted that in all the economic discussion the cost of not moving to OA is ignored. Most of the quantitative exercise has focused on the billions that the academic publishing industries contribute to the global economy, or the citation advantage that OAP may offer, or the economic advantage of adopting OAP in terms of savings of public money.

⁷ See infra Section 3.2.1.

However, no specific economic quantification has addressed the ‘loss of efficient communication between scholars, and in particular the stifling of innovative interdisciplinary research and cross-discipline synergy of research’.⁸ Although it is an extremely difficult value to quantify, and similar quantifications have been attempted quite unsuccessfully by economists trying to define the value of the public domain, research in this direction may substantially strengthen the arguments of OAP advocates.

III.3.3. Article Processing Charges

III.3.3.1. The Article Processing Charges (APCs) business model has emerged as the seemingly most sustainable business model in academic OAP. For the large part, the literature’s focus has addressed the discussion of this OAP business model. However, although widely implemented and irrefutably the dominant business model for OAP, APCs have also collected a large share of critiques. In this respect, on the one hand it may be useful to undertake a comprehensive review of the value and disvalue of the APC business model, including variations such as the so-called hybrid OA, with special emphasis on the long-term sustainability of APC business models. This review should also be accompanied by an investigation of the foreseeable scenarios in which the global implementation of APCs as a primary tool to sustain academic publishing may lead academic research. On the other hand, research and literature should map and discuss in more detail OAP business models that may be an alternative to the APC model, highlighting the possible advantages, sustainability challenges, and foreseeable effects of their implementation on the future of academic research and publishing.

III.3.3.2. An additional research gap is closely related to the implementation of the APC business model as well as competition issues. Research should investigate the opportunity for introducing specific regulatory mechanisms for APCs, especially looking at the negative and positive externalities of having fixed APC prices in this field. One possible useful research exercise would be to make a comparative study between a model for fixed APCs and the French model for fixed prices in books, expanding the investigation to similar mechanisms in other jurisdictions, if any is in place, or other markets. This research strand appears to be critical in order to avoid a recursive recurrence of rising costs from the ‘serial crisis’ to the ‘APCs crisis’, so that we may change everything to in fact change nothing.

III.3.4. OA Book Publishing

OA book publishing is set to be the next challenge and frontier of OAP. Although projects are emerging in abundance to investigate viable business models to promote OA book publishing, literature still seems to be scarce on the subject. Comprehensive works focusing

⁸ See *infra* Section 3.5.1.

exclusively on OA monographs and books are expected. Investigation should first of all look into the applicability to books and monographs of the arguments that have led to questioning the economics of scholarly publishing of journals. Again, research should be undertaken to review business models for academic books, compare them and identify the most sustainable, also in light of a possible inclusion of books and monographs into mandatory open access regulatory frameworks.

Research Gap IV: OA Mandate Policies

Another set of research gaps emerges in connection with the widespread implementation of OA mandate policies.

Literature has noted that the advantages of OA mandate policies will be better understood only when a comprehensive picture of their history and current practice is provided in systematic studies; hence those systematic studies would be a welcome addition to the literature.

IV.1. Compliance and Enforcing Mechanisms

Although literature has looked into the compliance rates of OA mandate policies, almost no attention has been devoted to enforcing mechanisms. Literature should carefully examine procedures which assure compliance with OA mandates and produce a set of proposals for defining which enforcing mechanisms – if at all and to which extent – should be put in place to force in compliant academic researchers to meet the OA mandates. This discussion should be inserted into the broader re-engineering of academic procedures and norms to evaluate academic performances and manage academic careers. This global integrated reform also seems needed according to commentators noting that the success of an OA mandate policy in terms of compliance and full participation may be obtained ‘only if the entire scholarly communications system is adjusted’.⁹

IV.2. Academic Freedom

The implementation of OAP mandate policies also poses critical concerns in connection with academic freedom. Some journals with high reputational value may not offer an OA option or have prohibitive APCs or other costs, which may impinge on academic freedom. Academics should have total freedom to publish where they wish; otherwise academic freedom may be limited. The very sensitive question of academic freedom has received limited attention by the literature. Therefore, additional research may specifically concentrate on the curtailing effects that the OAP mandate regime may have on academic freedom and the mechanisms that should be put in place in order to minimise these effects.

⁹ See infra Section 4.5.

This is, in fact, one fundamental question that the OAP debate should answer. It is disputable to pave the way to enhanced access to knowledge by limiting the freedom of academic authors to make independent decisions regarding the medium and place through which they want to make their voice heard.

IV.3. Rationale for OA Book Publishing and Mandate Policies

The inclusion of monographs in OA mandate policies may give rise to criticism and opposition. If one of the basic supporting arguments for OAP of publicly funded research – and therefore for justifying the fairness of forcing an academic author into an OA policy mandate against several hundred years of copyright incentive theory – is the coverage of the publication's subject matter by the research grant, OAP for books may present a challenging case. Is a book the same as a journal article in terms of perfect overlapping between research grant and the subject matter included in the publication? It is probable that research may come up with fruitful results investigating along these lines, also in light of the consideration that OA mandate policies for monographs and books may pose a far more serious threat to general copyright theory than OA mandate policies for journal articles and other research outputs. Undeniably, the book has critically characterised the history of copyright and authorship rights more than any other creative artifacts. Dispossessing an unwilling author, although academic, from the highest fruits of their 'genius' – such as those embedded in a book, which tends to become a comprehensive representation of the whole authorial persona, which can hardly be confined to the results of work carried out in fulfilment of a research grant – may potentially turn upside down 300 years of Lockean theory of copyright. Any such policy decision must be supported by a very careful investigation and should have strong theoretical justifications.

PART 1 – HISTORY AND THEORY

ABSTRACT

The first part of this literature review starts in Section 1.1 with an initial review of the historical underpinnings of the notion of knowledge, with special emphasis on academic knowledge and its traditional open access status of absent copyright regulations. The construction of knowledge as a gift has throughout the centuries faced a relentless process of propertisation. Section 1.2 gives an account of this trend towards commodification and propertisation of knowledge, before looking at the re-emergence of open access and gift economy in the modern interconnected digital society. In looking at the return of open access, Section 1.3 discusses in general terms the theoretical background to open access publishing, including the commons movement, digital commons, free software and open source, creative commons, wikis and Wikipedia, science commons and open patenting, and finally the notion of open science, which is an umbrella concept within which all the emerging open access movements must be framed. Section 1.4 tackles more specifically the emergence of the open access publishing movement, looking at its history, definitions and sub-themes, such as OAP in science, humanities, law, primary sources, etc. Finally, Section 1.5 frames the overall discussion within the analysis of the notion of academic cultural commons, open university and open learning, and the construction of open knowledge environments.

1.1 *SCIENTIAE DONUM DEI EST UNDE VENDI NON POTEST*

The modern debate about the future of academic publications tends to present OA as an unprecedented change of paradigm, a leap of faith. In contrast, the idea of OA – and the return of OA – has a credible source in the history of knowledge.¹⁰ In ancient Greece, and most pre-modern civilisations, knowledge and information seem not to have been regarded as an ownable commodity.¹¹ In this respect, the example of the Sophists' teaching activities may be instructive. They were the first group to teach in exchange for a reward and the fact

¹⁰ See Karl-Nikolaus Peifer, 'The Return of the Commons – Copyright History as a Helpful Source?' (2008) 39(6) IIC 679 (discussing open access publishing as an historical recurrence).

¹¹ See Christopher May and Susan K Sell, *Intellectual Property Rights: a Critical History* (Lynne Rienner Publishers 2006) 46. See also Carla Hesse, 'The Rise of Intellectual Property, 700 B.C.--A.D. 2000: An Idea in the Balance' (2002) 131.2 *Daedalus* 26, 26 (noting that '[a]ncient Greeks did not think of knowledge as something that could be owned or sold' and adding that '[a] tour of the [. . .] great civilizations of the pre-modern world – Chinese, Islamic, Jewish, and Christian – reveals a striking absence of any notions of human ownership of ideas and their expressions').

that they took fees for their teachings was largely objected to by many.¹² In any event, even in the case of the Sophists, ownership was unlikely to be attached to the subject of their teachings.¹³ A large number of manuals reporting their teachings were written by their audience and then copied by others. No objection to this practice is reported by the Sophists. Conversely, they may have regarded these manuals as a form of publicity that expanded their reputation, and perhaps increased the reward that they may have earned through their freelance teaching activities.¹⁴

Again, a well-known story related to Plato's teachings seems to stress the ancient notion that knowledge was not to be treated as an ownable commodity. The subjects of Plato's writings were undoubtedly taught first to a small circle of students. Plato's hearers appear to have first brought the material before the public by circulating the written reports of his lectures. Hermodoros of Syracuse, student of Plato, is reported to have made a trade of the sale of Plato's lectures after preparing written reports of his instructor's talks.¹⁵ As seems probable, the teachings of Plato were a gift to his hearers. In contrast, Hermodoros carried Plato's notebooks off to Sicily and secured certain profits from their sales.¹⁶ Hermodoros' conduct was highly condemned in the Ancient world. The moral contemptibility of Hermodoros' activity lay in distributing Plato's works for a material gain.¹⁷ His misconduct earned such widespread contempt as to become proverbial – 'Hermodoros trades in tracts' – as reported also by Cicero in a famous letter to Atticus.¹⁸

In the sixth century A.D., an attempt to protect open access to knowledge from private enclosure has been reported to have precipitated a civil war.¹⁹ During a visit to his ancient

¹² See David L Blank, 'Socratics Versus Sophist on Payment for Teaching' (1986) 4 *Classical Antiquity* 1 (discussing the Sophistic model as opposed to the Socratic one); George B Kerferd, *The Sophistic Movement* (CUP 1981) 25.

¹³ See Salathiel Masterson, 'Copyright: History and Development' (1940) 28 *Cal. L. Rev.* 620, 623 [hereinafter Masterson, *Copyright: History and Development*] (noting that Protagoras was the first who received pay for his lessons, however 'his remunerative works is [. . .] an example of property produced from an intellectual product, but not yet of property resulting from the production of a work of literature').

¹⁴ See May and Sell, *Intellectual Property Rights* (n 11) 45.

¹⁵ See John Dillon, *The Heirs of Plato: A Study of the Old Academy* (347-274 BC) (OUP 2003) 197-198.

¹⁶ See Philodemos, VI History of the Academy 6-10, as cited in III-VI Proceedings of the Danish Institutes at Athens (The Institute 2000) 30. See also William Mure, *A Critical History of the Language and Literature of Ancient Greece* (Longman et al. 1853) 39.

¹⁷ See Katharina de la Durantaye, 'The Origins of the Protection of Literary Authorship in Ancient Rome' (2007) 25 *B U Int'l LJ* 37, 60-62.

¹⁸ Marcus Tullius Cicero, *Letters to Atticus* (David R Shackleton Bailey, ed, Cambridge U. Press 2004) XIII 21a.

¹⁹ See, reporting the anecdote, Charles F Montalembert, *Saint Columba: Apostle of Caledonia* (William Blackwood and Sons 1868) 17-25; Edward A Cock, *Life and Work of St. Columba* (Simpkin, Marshall 1888) 56-57; Harold C Streibich, *The Moral Right of Ownership to Intellectual Property Part I - From the Beginning to the*

master Abbot Finnian, the Irish Saint Columba decided to make a copy of the Abbot's Psalter. Apparently, Finnian discovered Saint Columba clandestinely at work and demanded the return of the copy he made. Finnian contended that a copy made without permission belonged to the owner of the original. Saint Columba refused to surrender the copy and the question was referred to the King of Tara, one Diarmid or Dermot. The king decided in favour of Finnian by noting that 'to every book belongs its son-book (or copy), as to every cow belongs her calf'.²⁰ Angered by the decision, Columba started a rebellion which ended with the defeat of the king. For once, copyright expansionism did not pay off. The copied manuscript, now on display in the Museum of the Royal Irish Academy, was later known as the *Catach*, or *Fighter*, or *Book of Battle*. Together with its silver case, the book was carried in battle by the O'Donnell clan to ensure victory as late as the end of the fifteenth century.²¹ Saint Columba fought strenuously for the right to transcribe other manuscripts throughout his life, as also indicated by another incident. This time, Saint Columba placed a curse on the work of Longarad, a reclusive doctor of law and philosophy, who refused to let Columba examine, and presumably copy, his works.²² As a result of his life and activities, Saint Columba is remembered by history as a great collector of manuscripts and one of the initiators of the monastic amanuensis tradition.²³ Perhaps his quest for openness and access to others' works and manuscripts played some role in the later capacity of monks to freely copy works and preserve the riches of ancient knowledge for humankind. Boosted by figures like Saint Columba, the Catholic Church was a catalyst for culture, erudition and learning during the so-called Dark Age, with monasteries serving as hubs of knowledge resources.²⁴

Saint Columba's strenuous defence of open access to knowledge and culture definitely intertwined with the mediaeval belief that learning was to come as a gift. 'Knowledge is a gift of God and cannot be sold', a mediaeval proverb rang.²⁵ The proverb was actually an interpolation into canon law doctrine of a passage from the Book of Matthew in which Jesus exhorted the disciples to treat the knowledge they received from him as a gift to be shared. In that passage, Jesus is recorded as saying: '[f]reely ye have received, freely give'.²⁶ Again, in the words of Marie de France, the gift of knowledge was to be left open to seed and burst

Age of Printing, (1976) 6 Mem. St. U. L. Rev. 1, 10-11; Masterson, 'Copyright: History and Development' (n 13) 622-623.

²⁰ Cock, *Life of St. Columba* (n 19) 56.

²¹ Ibid.

²² See Streibich, 'The Moral Right of Ownership to IP' (n 19) 11.

²³ See ibid 63; Cock, *Life of St. Columba* (n 19) 65.

²⁴ See May and Sell, *Intellectual Property Rights* (n 11) 49; Arnold Hauser, *The Social History of Art* (Routledge 1999) (1951) 152.

²⁵ See Gaines Post, Kimon Giocarinis, and Richard Kay, 'The Medieval Heritage of a Humanistic Ideal: "Scientia Donum Dei est, Unde Vendi non Potest"' (1955) XI TRADITION 195, 195-234.

into flower. In the prologue of her tales, Marie de France described the productive web of reciprocations of knowledge exchange by stating:

[t]o Whom God has given the gift of science / And the eloquence of good speech / Must not be silent or conceal it / But willingly show it / When a great good is heard by many / Then it begins to seed / And when it is praised by many / Then it bursts into flower.²⁷

The mediaeval canon law doctrine reinforced the Greek ideal that, as we have seen earlier, was represented in the long-lasting proverbial dictum ‘Hermodoros trades in tracts’. In mediaeval times, the Greek ideal was applied for a long time to storytellers, the sale of notarial and scribal productions, or to professors, who were to take no fees for their teachings.²⁸ In the case of teaching, the patterns of gifts in knowledge-based transactions were still vital as late as the sixteenth century.²⁹ At this time, students in Paris and Montpellier used to present banquets, fruits, sweets and wine to their professors after examinations and disputations.³⁰ The old humanist ideal *scientia donum dei est, unde vendi non potest* was partially reflected also in the reproduction of manuscripts, at least within university settings. After universities took over the role of the monasteries beginning in the twelfth century, they maintained a strict open access policy towards intellectual resources. The university regulations excluded property rights over any written words by providing that manuscript dealers could not refuse to lend a copy to a member of the university even though the loan was requested for producing copies.³¹ Again, the so-called *pecia* system was an example of a fully operational primitive peer-to-peer network, in which the copying of manuscripts was perceived as a meritorious and godly act.³² The *pecia* system was originally

²⁶ Matthew, 10:8. See also Hesse, ‘The Rise of Intellectual Property’ (n 11) 27.

²⁷ Marie de France, *Les Lais de Marie de France*, (Jean Rychner ed, Paris 1973) Prologue, ln. 1-8. See also Laurie A Finke and Martin B Shichtman, ‘Magical Mistress Tour: Patronage, Intellectual Property, and the Dissemination of Wealth in the “Lais” of Marie de France’ (2000) 25 *SIGNS* 479, 498.

²⁸ See Natalie Zemon Davis, ‘Beyond the Market: Books as Gifts in Sixteenth-Century France’ (1983) 33 *Transactions of the Royal Historical Society* 69, 71 (noting, however, that the text of Luke that ‘the laborer is worthy of his hire’ was finally used to justify some payments for the teachers and scribes.)

²⁹ *Ibid* 72; Post and others, ‘The Medieval Heritage of a Humanistic Ideal’ (n 25) 195.

³⁰ See Davis, ‘Beyond the Market’ (n 28) 71-72.

³¹ See May and Sell, *Intellectual Property Rights* (n 11) 50; Masterson, ‘Copyright: History and Development’ (n 13) 624-625. But see Mark Rose, *Authors and Owners: The Invention of Copyright* (Harvard University Press 1993) 9, citing George H. Putnam, *II Books and their Makers During the Middle Ages* (Hillary House 1962) (1896-97) 481-483 (noting that ‘in the Middle Ages the owner of a manuscript was understood to possess the right to grant permission to copy it, and this was a right that could be exploited, as it was, for example by those monasteries that regularly charge a fee for permission to copy one of their books’).

³² Cf Davis, ‘Beyond the Market’ (n 28) 72. See also Graham Pollard, ‘The Pecia System in the Medieval Universities’, in Malcolm Parkes and Andrew G Watson (eds), *Medieval Scribes, Manuscripts and Libraries: Essays Presented to N. R. Ker* 145-161 (Scolar Press 1978); Alexander Gieysztor, *Management and Resources, in*

developed in European universities as a regulated procedure for reproducing books and keeping their prices as low as possible. The *peciae* were sections into which the books were broken, then loaned, usually for a small fee, to be copied by students. The distribution of the *peciae* among a large number of students working simultaneously enabled copying in a shorter amount of time than a copier working alone. Even after the emergence of commercial scriptoria,³³ university authorities continued to recognise that knowledge was a gift of god that should not be sold too dearly by implementing a careful regulation of the rates for the rental and sale of manuscripts.³⁴

Erasmus of Rotterdam evoked the pre-modern tradition of openness and sharing of knowledge by starting his collection of *Adages* in 1508 programmatically with the proverb 'friends hold all things in common' – *amicorum communia omnia* in the original Latin version.³⁵ The ancient tradition echoes powerfully in Erasmus' programmatic proverb, if we recall the lines of Macrobius' *Saturnalia*: 'all poets and other writers are allowed to act among themselves in this way, as partners holding in common [*haec societas et rerum communio*]'.³⁶ The *Adages* of Erasmus is a particularly successful product of the emerging printing industry of the early sixteenth century that looked ahead to the development of copyright and back to the ancient tradition that ideas and knowledge should be universally shared in the spirit of friendship.³⁷ A long-lasting tradition of gift exchange emerges in the mediaeval and early Renaissance mechanics of book distribution and circulation. Traditionally, mediaeval manuscripts included an illumination of the author on bended knee presenting the book to a patron.³⁸ The illuminations attested to a tradition of public gift in the exchange of books. As reported by Natalie Zemon Davis, gift exchange was the dominant

Hilde De Ridder-Symoens (ed), *A HISTORY OF THE UNIVERSITY IN EUROPE: VOLUME 1, UNIVERSITIES IN THE MIDDLE AGES 128-129* (Cambridge U. Press 2003).

³³ Scriptoria were the publishing houses of the time, where multiple copyists reproduced multiple editions of books by handwriting.

³⁴ See Davis, *'Beyond the Market'* (n 28) 72.

³⁵ Desiderius Erasmus, *The Adages of Erasmus* (William Barker (ed), U Toronto Press 2001) 28-30.

³⁶ See Eden Katly, *Friends Hold All Things in Common: Tradition, Intellectual Property and the Adages of Erasmus* (Yale University Press 2001) (noting that the *Adages* 'not only credit antiquity with Renaissance humanism's understanding of tradition but also helps to set in motion the inevitable collision between a shared notion of common tradition and the privately held interest in the written word that later centuries will call intellectual property').

³⁷ See Eden Katly, *Friends Hold All Things in Common: Tradition, Intellectual Property and the Adages of Erasmus* (Yale University Press 2001) (also arguing that the *Adages* 'not only credit antiquity with Renaissance humanism's understanding of tradition but also helps to set in motion the inevitable collision between a shared notion of common tradition and the privately held interest in the written word that later centuries will call intellectual property').

³⁸ See, e.g., Karl Julius Holzkmnecht, *Literary Patronage In The Middle Ages* 165 (Frank Cass & Co. 1966) (1923). See also Clark Hulse, *The Rule of Art: Literature and Painting in the Renaissance* 44 (U. Chicago Press 1990).

method for the initial diffusion of late-mediaeval writings.³⁹ The author used to send the work to a powerful, reputable and wealthy person, who sent back a gift, enhanced the lustre of the work through his reputation, and defended the work against criticism, if necessary.⁴⁰ In this context, written scholarly correspondence among individual scholars and exchange of manuscripts in the form of a gift characterised the scholarly discourse before and, for a long time, after the advent of print. Inspired by the Erasmian and ancient ethos of commonality and friendship, the goal of the first university presses – which appeared shortly after the invention of print, such as Oxford University Press already printing in 1478 – was to advance scholarship through making the research available to fellow scholars, rather than selling books.⁴¹

The advent of the first academic journals in the seventeenth century institutionalised and generalised the pre-print – and early print – system of scholarly correspondence among individual scholars and exchange of manuscripts.⁴² The crystallisation of that system led to the emergence of the notion of ‘open science’. As Paul David has argued in a seminal work dedicated to the *Historical Origins of ‘Open Science’*, the need to build a publicly recognised reputation within the patronage economy fostered more open forms of science.⁴³ With the creation of the *Philosophical Transactions* of the Royal Society of London by Henry Oldenburg in 1665 – the first modern peer-reviewed academic journal – the old scholarly tradition of open knowledge was channelled into a procedure for establishing knowledge claims that could be evaluated and recognised by peers and then utilised by the public.⁴⁴ The very same year, the Académie Française in Paris started publishing the *Journal des sçavans*, which was even more influenced by the previous forms of manuscript epistolary exchanges that were so typical of the Republic of Letters.⁴⁵ Both publications were characterised by the fact that scholarly associations of the state were supporting the system, construing scholarly publication as a public good rather than a commodity.⁴⁶ As Paul David has noted, modern

³⁹ See Davis, ‘Beyond the Market’ (n 28) 73.

⁴⁰ *Id.*

⁴¹ Michael Nentwich, ‘(Re-)De-Commodification in Academic Knowledge Distribution?’ (2001) 14(2) *Science Studies* 21, 21-42.

⁴² *Ibid* 22.

⁴³ See, for an historical analysis of the notion of open science, Paul A David, ‘The Historical Origins of ‘Open Science’: An Essay on Patronage, Reputation and Common Agency Contracting in the Scientific Revolution’ (2008) 3(2) *Capitalism and Society* 1.

⁴⁴ See Jean Claude Guedon, *In Oldenburg’s Long Shadow: Librarians, Research Scientists, Publishers, and the Control of Scientific Libraries* (Association of Research Libraries 2001) 5-8 <<http://www.arl.org/storage/documents/publications/in-oldenburgs-long-shadow.pdf>> accessed 13 June 2013.

⁴⁵ *Ibid* 5 (describing the more marketed departure from the past of the *Philosophical Transactions* if compared with the French publication, although the two publications have always been considered as ‘twin sisters’).

⁴⁶ See Nentwich, ‘(Re-)De-Commodification in Academic Knowledge Distribution?’ (n 41) 22.

public patronage of research and scholarship still remains the 'European feudalism's great gift to the economic vigor of capitalism in the modern age.'⁴⁷

1.2 THE ROAD TO PROPERTISATION

The idea that culture, knowledge and creativity are gifts that cannot be sold on the open market has strong roots in ancient and mediaeval times. Eventually, the market took over almost entirely by the beginning of the nineteenth century.⁴⁸ Since the 1960s, law and economics scholars have launched a crusade to expose the evil of the commons, the evil of not propertising.⁴⁹ Since Harold Demsetz, economists have viewed property rights as a desirable tool to internalise the full social value of people's actions and therefore maximise the incentive to engage in those actions.⁵⁰ An influential article written by Garret Hardin in 1968 termed the evil of not propertising the tragedy of the commons.⁵¹ The subject of Hardin's essay was the carrying capacity of the commons and its limits. Hardin identified the tragedy of the commons in the environmental dysfunctions of overuse and underinvestment found in the absence of a private property regime. Hardin made it clear that any commons open to all, ungoverned by custom or law, will eventually collapse. Hardin's analysis shaped the debate to come.⁵² The fear of the tragedy of the commons propelled the idea that more property rights necessarily led to the production of more information together with the enhancement of their diversity. In this perspective, the prevailing assumption is that anything of value within the public domain should be commodified. This 'cultural

⁴⁷ Paul A David, 'Common Agency Contracting and the Emergence of 'Open Science' Institutions' (1998) 88(2) *American Econ Rev* 15, 20.

⁴⁸ See Mark Rose, 'Nine-Tenths of the Law: The English Copyright Debates and the Rhetoric of the Public Domain' (2003) 66 *Law & Contemp. Probs.* 75, 85 (noting that, since its inception, the public domain discourse was comparatively weak against the rhetoric of property, as the law is mostly about property or, as the adage has it, possession is nine-tenths of the law).

⁴⁹ See H Scott Gordon, 'The Economic Theory of a Common-Property Resource: The Fishery', (1954) 62 *J Pol Econ* 124 and Anthony D Scott, 'The Fishery: The Objectives of Sole Ownership' (1955) 63 *J Pol Econ* 116 (introducing an economic analysis of fisheries that demonstrated that unlimited harvesting of high-demand fish by multiple individuals is both economically and environmentally unsustainable). See also Lee A Fennell, 'Commons, Anticommons, Semicommons' in Kenneth Ayotte and Henry E Smith (eds), *Research Handbook on the Economics of Property Law* (Edward Elgar 2010); Chander Anupam and Madhavi Sunder, 'The Romance of the Public Domain' (2004) 92 *Cal L Rev* 1331, 1332-1333 (discussing the move toward propertisation).

⁵⁰ See Harold Demsetz, 'Toward a Theory of Property Rights' (1967) 57 *American Econ Rev* 347. See also Eli M Salzberger, 'Economic Analysis of the Public Domain' in Lucie Guibault and P Bernt Hugenholtz (eds), *The Future of the Public Domain: Identifying the Commons In Information Law* 33-36 (Kluwer Law International 2006).

⁵¹ See Garrett Hardin, 'The Tragedy of the Commons' (1968) 162 *Science* 1243.

⁵² See James Boyle, 'Foreword: The Opposite of Property' (2003) 66 *Law & Contemp. Prob.* 1, 7 (noting that, 'any discussion of intellectual property or the public domain proceeds in the shadow of the tragedy of the commons').

stewardship model', as Julie Cohen has termed it,⁵³ regarded ownership as the prerequisite of productive management, assumed that any commons is inefficient, and promoted the idea that opposing the expansion of intellectual property is a mistake in economic terms.⁵⁴ As Paul Goldstein puts it, 'the best prescription for connecting authors to their audiences is to extend rights into every corner where consumers derive value from literary and artistic works. If history is any measure, the results should be to promote political as well as cultural diversity, ensuring a plenitude of voices, all with the chance to be heard'.⁵⁵ The recent tremendous expansion of intellectual property rights has been justified by this statement and the like.

1.3 THE RETURN OF OPEN ACCESS

In recent years, however, a revisionist movement has also started to ponder whether our copyright policies struck the right balance between protection, incentive to creation, access to knowledge, circulation and cumulative production of knowledge. Modern technological advancement – and the misperception of the 'Internet threat'⁵⁶ – has in fact increasingly disoriented the coordinates by which the solution of the copyright paradox should be calculated and exacerbated the tension lying within it. Scholars and the civil society have warned that 'we are in the midst of an enclosure movement in our information environment'.⁵⁷ Professor Boyle has talked about a second enclosure movement that it is now enclosing the 'commons of the mind'.⁵⁸ As for the natural commons, fields, grazing

⁵³ See Julie Cohen, *Copyright, Commodification, and Culture: Locating the Public Domain*, in Lucie Guibault & P. Bernt Hugenholtz (eds), *The Future of the Public Domain: Identifying the Commons in the Information Law* (Kluwer Law International 2006) 134-135.

⁵⁴ See William Landes and Richard Posner, *The Economic Structure of Intellectual Property Law* (Harvard University Press 2003).

⁵⁵ Paul Goldstein, *Copyright's Highway: From Gutenberg To The Celestial Jukebox* (Stanford University Press 1994) 236. See also Wagner R Polk, 'Information Wants to Be Free: Intellectual Property and the Mythologies of Control', 103 Colum. L. Rev. 995 (2003) (arguing that 'increasing the appropriability of information goods is likely to increase, rather than diminish, the quantity of "open" information').

⁵⁶ See James Boyle, *The Public Domain: Enclosing the Commons of the Mind* (Yale University Press 2009) 54-82.

⁵⁷ Yochai Benkler, 'Free as the Air to Common Use: First Amendment Constraints on the Enclosure of the Public Domain' (1999) 74 N.Y.U. L. Rev. 354, 354. David Lange first identified this trend toward greater 'propertisation' of information and recognised that copyright protection means enclosure of the public domain. See David Lange, 'Recognizing the Public Domain' (1981) 44 Law & Contemp. Probs. 147, 147, 150. Nonetheless, as Professor Lange noted in his seminal work, the expansion of property rights in information products has been the subject of cautionary critique at least since Benjamin Kaplan, 'An Unhurried View of Copyright: Proposals and Prospects' (1966) 66 Col. L. Rev. 831 and Stephen Breyer, 'The Uneasy Case for Copyright' (1970) 84 Harv. L. Rev. 281.

⁵⁸ See James Boyle, *The Second Enclosure Movement and the Construction of the Public Domain*, (2003) 66 Law & Contemp. Probs. 33; Boyle, *The Public Domain* (n 56) 42-53; see also Keith E Maskus and Jerome H Reichman, 'The Globalization Of Private Knowledge Goods And The Privatization Of Global Public Goods' (2004) 7 J. Int'l Econ. L. 279; David Bollier, *Silent Theft: The Private Plunder of Our Common Wealth* (Routledge 2002).

lands, forests and streams, which were enclosed in the sixteenth century in Europe by landowners and the state, relentlessly expanding intellectual property rights are enclosing the intellectual commons.⁵⁹ In a very similar fashion, Peter Drahos and John Braithwaite have spoken of 'information feudalism'.⁶⁰ As in the case of mediaeval feudalism, a redistribution of property rights involves this time a transfer of knowledge from the intellectual commons to media conglomerates and integrated life science corporations, rather than individual scientists and authors.⁶¹ Authors have argued that this process of 'commodification of information' is promoted by a mix of technology and legislation.⁶² According to Bernt Hugenholtz and Lucie Guibault, as a consequence of the transformation of the meaning of market power operated by the information economy, '[i]tems of information, which in the "old" economy had little or no economic value, such as factual data, personal data, genetic information and pure ideas, have acquired independent economic value in the current information age, and consequently become the object of property rights making the information a tradable commodity'.⁶³ The commodification of information is propelled by the ability of new technologies to capture resources previously unowned and unprotected, as in a new digital land grab.⁶⁴ Professor Elinor Ostrom and her colleague Charlotte Hesse have reinforced this point by arguing that '[i]nformation that used to be "free" is now increasingly being privatized, monitored, encrypted, and restricted. The enclosure is caused by the conflicts and contradictions between intellectual property laws and the expanded capacities of new technologies'.⁶⁵ This may have serious effects on the academic cultural commons, as – Ostrom and Hesse still argue – this process of enclosure

⁵⁹ See Boyle, 'The Second Enclosure Movement' (n 58) 33-36.

⁶⁰ See Peter Drahos with John Braithwaite, *Information Feudalism: Who Owns the Knowledge Economy?* (Earthscan Publications 2002).

⁶¹ Ibid 2-3 (arguing that the 'effect of this [. . .] is to raise levels of private monopolistic power to dangerous global heights, at a time when states, which have been weakened by the forces of globalization, have less capacity to protect their citizens from the consequences of the exercise of this power'9).

⁶² See Niva Elkin-Koren & Neil W. Netanel (eds), *The Commodification of Information: Political, Social, and Cultural Ramifications* (Kluwer Law International 2002).

⁶³ P Brent Hugenholtz and Lucie Guibault, 'The Future of the Public Domain: An Introduction' in Lucie Guibault and P Brent Hugenholtz (eds), *The Future of the Public Domain: Identifying the Commons In Information Law* (Kluwer Law International 2006) 1. See also Niva Elkin-Koren, 'It's All About Control: Rethinking Copyright in the New Information Landscape' in Niva Elkin-Koren and Neil W. Netanel (eds), *Commodification of Information: Political, Social, and Cultural Ramifications* (Kluwer Law International 2002) 81-82 (noting that, in addition, the decentralised nature of the Internet has increased the significance of control over the content via copyright law and has augmented the pressure on the legal system to produce new means of market control).

⁶⁴ See Charlotte Hess and Elinor Ostrom, 'Introduction: An Overview of the Knowledge Commons' in Charlotte Hess and Elinor Ostrom (eds), *Understanding Knowledge as a Commons: From Theory to Practice* (MIT Press 2007) 12. See also Pamela Samuelson, 'The Copyright Grab' (2001) 4.01 Wired <http://www.wired.com/wired/archive/4.01/white.paper_pr.html> accessed 16 April 2013.

⁶⁵ Charlotte Hess and Elinor Ostrom, 'Ideas, Artifacts, and Facilities: Information as a Common-Pool Resource' (2003) 66 Law & Contemp. Probs. 111, 112.

'leads to speculation that the records of scholarly communication, the foundations of an informed, democratic society, may be at risk'.⁶⁶ Again, extreme propertisation and commodification of information – which has been reinforced in the information society – seems to be a counterintuitive option for the networked information society in light of the opportunities that digitisation and Internet distribution offer. As Professor Paul David has argued,

Today, the greater capacity for the dissemination of knowledge, for cultural creativity and for scientific research carried out by means of the enhanced facilities of computer-mediated telecommunication networks, has greatly raised the marginal social losses that are attributable to the restrictions that those adjustments in the copyright law have placed upon the domain of information search and exploitation.⁶⁷

In fact, the road to propertisation, especially in view of the value of open access in the digital environment, seems not to be the sole option, as fundamental literature has highlighted in recent years. Nobel laureate Elinor Ostrom powerfully advocated the cause of the commons against the mantra of propertisation. Ostrom's works showed the inaccuracies of Hardin's tragedy of the commons.⁶⁸ Empirical studies, which Ostrom has spearheaded, have shown that common resources can be effectively managed by groups of people under suitable conditions, such as appropriate rules, good conflict-resolution mechanism, and well-defined group boundaries.⁶⁹ Under suitable conditions and proper governance the tragedy of the commons becomes 'the comedy of the commons'.⁷⁰ This is especially true for cultural commons, with special emphasis on academic cultural commons.⁷¹ Culture in fact represents

⁶⁶ Ibid.

⁶⁷ Paul A David and Jared Rubin, 'Restricting Access to Books on the Internet: Some Unanticipated Effects of U.S. Copyright Legislation' (2008) 5 Rev Econ Res Copyright Issues 23, 50 <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1260527> accessed 16 April 2013.

⁶⁸ See Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action* (Cambridge University Press 1990); Elinor Ostrom, Roy Gardner, and James Walker, *Rules, Games, and Common-Pool Resources* (University of Michigan Press 1994); Elinor Ostrom, *The Drama of the Commons* (National Academies Press 2002).

⁶⁹ See Hesse and Ostrom, 'Introduction' (n 64) 11; Susan S Hanna, Carl Folke, and Karl-Göran Mäler (eds), *Rights to Nature: Ecological, Economic, Cultural, and Political Principles of Institutions for the Environment* (Island Press 1996); Daniel W Bromley, David Feeny and others (eds), *Making the Commons Work: Theory, Practice and Policy* (ICS Press 1992); Robert V Andelson (ed), *Commons without Tragedy: The Social Ecology of Lana Tenure and Democracy* (Center for Incentive Taxation 1991); David Feeny and others, 'The Tragedy of the Commons: Twenty-Two Years Later' (1990) 18 Human Ecology 1.

⁷⁰ See Carol M Rose, 'The Comedy of the Commons: Custom, Commerce, and Inherently Public Property' (1986) 53 U Chi L Rev 711 (arguing that the commons, rather than ineludibly turning into a tragedy of underproduction, may turn into a comedy of efficient production if managed through the appropriate rules).

⁷¹ See, for an analysis of academic cultural common building upon Ostrom's pioneering work in the natural resources environment, Michael J Madison, Brett M Frischmann and Katherine J Strandburg, 'The University as Constructed Cultural Commons' (2009) 30 Wash U J L & Pol'y 365; Michael J Madison, Brett M Frischmann and

a quintessential example of comedic commons because it gets enriched through reference the more people consume it.⁷² This is because the carrying capacity of cultural commons is endless and cultural commons are non-rivalrous. As the argument goes, rather than being a solution to manage efficiently scarce resources, propertisation and enclosure in the cultural domain may be a wasteful option by cutting down social and economic positive externalities.⁷³ Reviewing the peculiar nature of cultural commons, the academic literature has turned the paradigm of underuse of common resources upside down by developing the idea of the tragedy of the anti-commons, which lies in the underuse of scarce scientific resources because of excessive intellectual property rights and all related transaction costs.⁷⁴

Recently, after a long unchallenged dominance of the market and a steady trend towards propertisation of knowledge-based outputs, gift exchange models seem to regain increasing relevancy in the networked information economy. Communities of social trust, such as Linux, Wikipedia, YouTube, fan-fiction communities, and major political websites, have spread virally on the Internet, powerfully boosted by open and gift exchange models. Technology has made possible large-scale cooperative behaviour and gift exchange that was previously limited to rarified groups.⁷⁵ Initially, the large-scale cooperative behaviour emerged and evolved in software communities⁷⁶ and the academia.⁷⁷ However, these cooperative and participative behaviours have spread far beyond these initial rarified

Katherine J Strandburg, 'Constructing Commons in the Cultural Environment' 95 Cornell L. Rev. 657 (2010). See also, discussing the notion of 'information commons', Elinor Ostrom and Charlotte Hess, A Framework for Analyzing the Knowledge Commons' in Charlotte Hess and Elinor Ostrom (eds), *Understanding Knowledge as a Commons: From Theory to Practice* (MIT Press 2007). For a very comprehensive list of the commons scholarship, including information, cultural and scientific commons, see Indiana University, Digital Library of the Commons <<http://dlc.dlib.indiana.edu/dlc>> accessed 2 June 2013.

⁷² See Lawrence Lessig, 'Re-crafting a Public Domain' (2006) 18 Yale J L & Human 56, 64.

⁷³ See Brett M. Frischmann and Mark A. Lemley, 'Spillovers' (2007) 107 Colum L Rev 257.

⁷⁴ See Michael A Heller, 'The Tragedy of the Anticommons: Property In the Transition from Marx to Markets' (1998) 111 Harv L Rev 621. See also Michael Heller, *The Gridlock Economy: How Too Much Ownership Wrecks Markets, Stops Innovation, and Costs Lives* 2 (Basic Books 2008). For a discussion of overpatenting in biomedical research as a quintessential example of the tragedy of the anti-commons, see Michael A Heller and Rebecca S Eisenberg, 'Can Patents Deter Innovation? The Anticommons in Biomedical Research' (1998) 280 Science 698.

⁷⁵ See Lewis Hyde, *The Gift: Creativity And The Artist In The Modern World* (Vintage Books 2007) (1979) (describing creativity exchange among artists); Robert K Merton, *The Sociology Of Science: Theoretical And Empirical Investigations* (University of Chicago Press 1973) 273-275, 339 (exploring norms of sharing among scientists).

⁷⁶ See *infra* at 2.2.3.

⁷⁷ See Madison, Frischmann and Strandburg, 'The University as Constructed Cultural Commons' (n 71) 378-402.

communities. From open source we have been moving to open culture.⁷⁸ Open networks and networked peer collaboration have transformed markets by enabling amateurs to innovate.⁷⁹ David Bollier has described this process as a ‘viral spiral’ by which Internet users come together to build digital tools and share content on self-created online commons.⁸⁰ In cyberspace human intelligence has become collective through mass collaboration, which – as several authors have increasingly noted – may stifle social and economic enrichment to a far greater extent than in the past.⁸¹ Benkler defines the high generative capacity of online commons as the ‘wealth of networks.’⁸² In the *Wealth of Networks*, Yochai Benkler writes: ‘[r]adical decentralization of intelligence in our communications network and the centrality of information, knowledge, culture, and ideas to advanced economic activity are leading to a new stage of the information economy — the networked information economy.’⁸³ The wealth of networks lies in social and networked peer production that is highly generative because it is modular, granular, and cheap to integrate the results.⁸⁴ To borrow Jerome Reichman’s categories, new forms of innovation enable the transformation of small grains of

⁷⁸ See Lee Davis, ‘Should the Logic of ‘Open Source’ Be Applied to Digital Cultural Goods? An Exploratory Essay’ in Helle Porsdam (ed), *Copyright and Other Fairy Tales: Hans Christian Andersen and the Commodification of Creativity* (Edward Elgar Publishing Ltd 2006) 129.

⁷⁹ See Stefan Thomke and Eric Von Hippel, ‘Customers as Innovators: A New Way to Create Value’ (2002) 80 Harv. Bus. Rev. 74.

⁸⁰ See David Bollier, *Viral Spiral: How the Commoners Built a Digital Republic of Their Own* (New Press 2009), available at <http://www.viralspiral.cc>.

⁸¹ A large quantity of literature has been produced on the value of mass collaboration in the networked information society. See, e.g., Clay Shirky, *Cognitive Surplus: Creativity and generosity in a Connected Age* (The Penguin Press 2010) (discussing the notion of ‘cognitive surplus’ of online brainpower); Charles Leadbeater, *We-Think: Mass Innovation, Not Mass Production* (Profile Books 2009); Don Tapscott and Anthony D Williams, *Wikinomics: How Mass Collaboration Changes Everything* (Atlantic Books 2008); Clay Shirky, *Here Comes Everyone: The Power of Organizing Without Organizations* (Penguin 2008); David Weinberger, *Everything Is Miscellaneous: The Power of the New Digital Disorder* (Henry Holt 2008); Cass R. Sunstein, *Infotopia: How Many Minds Produce Knowledge* (Oxford U. Press 2006); Pierre Levy, *L’Intelligence Collective: Pour Une Anthropologie Du Cyberspace* (Editions La Découverte 1995). See also, on the broader concept of collaboration in human life, Richard Sennett, *Together: The Rituals, Pleasures, and Politics of Cooperation* (Yale U Press 2012). However, some authors have criticised the cult of the amateur and the wisdom of the crowd by noting that much of the content filling up YouTube, MySpace and blogs is just an endless digital forest of mediocrity which, unconstrained by professional standards or editorial filters, can alter public debate and manipulate public opinion. See, e.g., Jaron Lanier, *You Are Not a Gadget* (Knopf Doubleday Publishing Group, 2010); Andrew Keen, *The Cult of the Amateur: How Blogs, Myspace, Youtube and the Rest of Today’s User-Generated Media are Killing our Culture and Economy* (Nicholas Brealey Publishing 2008); Nicholas Carr, ‘The Ignorance of Crowds’ (*strategy+business*, May 31, 2007) <<http://www.strategy-business.com/media/file/enews-05-31-07.pdf>>; cf Nicholas Carr, *The Shallows: What the Internet is Doing to Our Brains* (W W Norton & Co. 2011).

⁸² See Yochai Benkler, *The Wealth of Networks: How Social Production Transforms Markets and Freedom* (Yale University Press 2007).

⁸³ Benkler, *The Wealth of Networks* (n 82) 32.

⁸⁴ *Ibid* 91-127.

information and innovation into distributed and collective forms of intelligence.⁸⁵ As Benkler puts it, the

networked environment makes possible a new modality of organizing production: radically decentralized, collaborative, and nonproprietary; based on sharing resources and outputs among widely distributed, loosely connected individuals who cooperate with each other without relying on either market signals or managerial commands. This is what I call 'commons-based peer production.'⁸⁶

In the emerging ecosystem of 'commons-based peer production,' open access models play a pivotal role that supposedly should run the networked information economy and enrich the wealth of networks. In this respect, theoretical developments have been accompanied by efforts to turn commons theory into practice. As technology has facilitated a vast array of cooperative creative projects, community production has been increasingly considered as a solution to the free-rider problems of cultural production by converging initiatives such as open source software, Creative Commons, Wiki environments or SSRN.⁸⁷ Actually, Creative Commons, the open-source software movement, and the free software movement have created a commons through private agreement and technological implementation.⁸⁸ Again, private firms in the biotechnological and software field have decided to forgo property rights to reduce transaction costs and circumvent any 'anti-commons' failure.⁸⁹ A call for open access in academic publishing follows in the footsteps of those many other initiatives and

⁸⁵ See, for example, Jerome H Reichman, 'Of Green Tulips and Legal Kudzu: Repackaging Rights in Subpatentable Innovation' (2000) 53 Vand L. Rev 1743.

⁸⁶ Benkler, *The Wealth of Networks* (n 82) 60.

⁸⁷ See John Willinsky, The Unacknowledged Convergence of Open Source, Open Access, and Open Science, (2005) 10(8) First Monday <<http://www.firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/1265/1185>> accessed 16 April 2013 (discussing the need to emphasise the converging nature of these initiatives serving as an active resistance to the extension of intellectual property rights and the emergence of an approach treating intellectual properties as public goods). See also Lisa Mandrusiak, 'Balancing Open Source Paradigms and Traditional Intellectual Property Models to Optimize Innovation' (2010) 63 Me L Rev 303.

⁸⁸ See, for a review of the notion of contractually constructed commons, Jerome H Reichman and Paul F Uhler, 'A Contractually Reconstructed Research Commons for Scientific Data in a Highly Protectionist Intellectual Property' (2003) 66 L & Contemp Probs 315. See also Lawrence Lessig, *The Future of Ideas: The Fate of The Commons in a Connected World* (Vintage Books 2002); Madison, Fisherman, and Strandburg, 'Constructing Commons in the Cultural Environment' (n 71); Molly Shaffer Van Houweling, 'Cultural Environmentalism and the Constructed Commons' (2007) 70 Law & Contemp Probs 5.

⁸⁹ See Robert P Merges, *A New Dynamism in the Public Domain*, (2004) 71 Chi. L. Rev. 183, 186-191. See also Eli M Salzberger, *Economic Analysis of the Public Domain*, in Lucie Guibault and P Bernt Hugenholtz (eds), *The Future of the Public Domain: Identifying the Commons In Information Law* 36 (Kluwer Law International 2006) (noting that these phenomena of de-propertyisation can also be seen as responses to the inefficient expansion of intellectual property rights).

the theoretical developments that brought them about.⁹⁰ Before turning to the discussion of the open access movement in academic publishing, we will first briefly review some of the other relevant practical implementations of commons theory.

1.3.1 Free/Libre and Open Source Software

The return of the gift and the emergence of nonproprietary, decentralised, open access models of intellectual production have been a marked feature of the software community since the early history of the digital networked society. In *The Cathedral and the Bazaar*, Eric Hamilton analysed the ‘hacker culture as a “gift culture” in which participants compete for prestige by giving time, energy and creativity away.’⁹¹ Yochai Benkler has extended the same conclusions to the open source movement.⁹² Again, in Benkler’s view, open source software is the ‘quintessential instance of commons based peer production’.⁹³ In this respect, the open source movement has also been construed as an eco-system that may act towards ‘democratizing innovation.’⁹⁴

After an initial communitarian approach to software’s source code, which was shared among developers and computer users, by the 1970s the business model started to change. Increasingly, the software market became proprietary and users were prevented through technical measures from reverse engineering software program. In 1980, copyright protection was extended to computer programs in the United States.⁹⁵ Similar extensions, then, occurred in other jurisdictions.⁹⁶ It was due to the discontent for these market practices that Richard Stallman started the GNU’s Not Unix (GNU) project in 1983, soon to

⁹⁰ See Suber Peter, ‘Creating an Intellectual Commons Through Open Access’ in Charlotte Hess and Elinor Ostrom (eds), *Understanding Knowledge as a Commons* (MIT Press 2006) (discussing open access publishing as a means to create an intellectual commons and highlighting obstacles to an OA commons that have the flavour of a tragedy of the commons).

⁹¹ Eric S Raymond, *The Cathedral and the Bazaar: Musings on Linux and Open Source by an Accidental Revolutionary* (O’Reilly Media Inc. 2001) 65. See also McKenzie Wark, *A Hacker Manifesto* (Harvard U. Press 2004).

⁹² See, for example, Yochai Benkler, ‘Sharing Nicely: On Shareable Goods and the Emergence of Sharing as a Modality of Economic Production’ (2005) 114 Yale L J 273; Benkler Yochai & Helen Nissenbaum, *Commons-Based Peer Production and Virtue*, 14 J. POL. PHIL. 394 (2006). See also Magnus Bergquist & Jan Ljungberg, ‘The Power of Gifts: Organizing Social Relationship in Open Source Communities’ (2001) 11 Info Systems J. 305.

⁹³ Benkler, *The Wealth of Networks* (n 82) 63. See also Yochai Benkler, ‘Coase’s Penguin, or, Linux and The Nature of the Firm’ (2002) 112 Yale L J 369; cf. Steven A. Hetcher, ‘Hume’s Penguin, or, Yochai Benkler & the Nature of Peer Production’ (2009) 11 Vand. J. Ent. & Tech. L. 963.

⁹⁴ See Eric von Hippel, *Democratizing Innovation* (MIT Press 2005); Douglas Rushkoff, *Open Source Democracy* (Demos 2003) 25 (discussing sharing and early gift economies in the Internet).

⁹⁵ See Open Source Initiative <<http://opensource.org>> accessed 30 April 2013.

⁹⁶ See, e.g., European Parliament and Council Directive 1991/250/EC on the Legal Protection of Computer Programs, 1991 O.J. (L 122) 9-13 (May 17, 1991) <<http://eur-lex.europa.eu>> accessed 30 April 2013.

be followed by the development of the GNU operating system and the creation of the Free Software Foundation (FSF).⁹⁷ GNU is a non-proprietary UNIX-like software granting its users four freedom rights: use, share, study and modify.⁹⁸ Through a metaphor that was set to become extremely popular, the FSF clarified that 'free software' is a matter of liberty, not price, by noting that free software is 'free as in free speech, not as in free beer'.⁹⁹ A major milestone for FSF took place when Linux Torvalds released the Linux kernel as a freely modifiable source code in 1991, which was relicensed under the GNU General Public Licence (GPL) in 1992.¹⁰⁰ Shortly thereafter, the Berkeley Software Distribution (BSD) – which originated through UNIX development at the University of California, Berkeley – was also released as a free software.¹⁰¹

Also in an attempt to mediate the extremism of the FSF approach with commercial concerns, the Open Source Initiative was launched in 1998.¹⁰² In justifying its different attitude – that was also inspired by the decision of Netscape Communications Corporation to release their Netscape Communicator Internet suite as a free software – the OSI founders noted that the initiative was started to 'dump the moralizing and confrontational attitude that had been associated with "free software" in the past and sell the idea strictly on the same pragmatic, business-case grounds that had motivated Netscape.'¹⁰³ The main difference between Open Source and Free Software lies in their licensing approach, and I will return to this point later. Open source software spread rapidly. Netscape code has become the browser today known as Mozilla Firefox and Thunderbird. Google, Oracle and IBM have become only a few among the major players in the open source market.

⁹⁷ See Richard Stallman, The GNU Manifesto <<http://www.gnu.org/gnu/manifesto.html>> accessed 30 April 2013. See also Eben Moglen, 'Freeing the Mind: Free Software and the Death of Proprietary Culture' (29 June 2003); Eben Moglen, 'Anarchism Triumphant: Free Software and the Death of Copyright' in Niva Elkin-Koren & Neil W Netanel (eds), *The Commodification of Information: Political, Social, and Cultural Ramifications* (Kluwer Law International 2002) <<http://emoglen.law.columbia.edu>> accessed 16 March 2013.

⁹⁸ See GNU Operating System, What is Free Software? The Free Software Definition <<http://www.gnu.org/philosophy/free-sw.html>> accessed 30 April 2013.

⁹⁹ Ibid.

¹⁰⁰ See Computer Software Copyright Act of 1980, Pub. L. No. 96-517, 94 Stat. 3015 <<http://www.law.cornell.edu/uscode/text/17/101>> accessed 30 April 2013. See also *Apple Computer Inc. v Franklin Computer Corp.*, 714 F 2d 1240 (3rd Cir 1983).

¹⁰¹ See Marshall Kirk McKusick, 'Twenty Years of Berkeley Unix: From AT&T-Owned to Freely Redistributable' in Chris DiBona, Sam Ockman and Mark Stone (eds), *OpenSources: Voices From the Open Source Revolution* (O'Reilly Media 1999) (detailing the spread of open source culture among the UC Berkeley computer science, mathematics, and statistics departments). See also Greg Lehey, *The Complete FreeBSD* (O'Reilly Media 2003); Michael W Lucas, *Absolute FreeBSD* (No Starch Press 2007).

¹⁰² See Eric Raymond, 'Goodbye, "Free Software": Hello, "Open Source"' (8 February 1998) <<http://www.catb.org/~esr/open-source.html>> accessed 30 April 2013.

¹⁰³ David Booth, *Peer Participation and Software: What Mozilla Has to Teach Governments* (MIT Press 2010) 8.

Steven Weber stresses the difference between open source software and the traditional intellectual property model by noting that open source software turns the principle of exclusivity of intellectual property upside down because this software is ‘configured around the right to distribute, not to exclude.’¹⁰⁴ As Maurer and Scotchmer have noted, open source software development remedies a defect of intellectual property protection, which does not generally encourage disclosure of the source code.¹⁰⁵ The open source model has been customarily characterised, though variants are plentiful, by software developers making their source code available for free to end-users and improvers. Authors have investigated at length the reasons why developers participate in open source collaborations instead of keeping their code proprietary.¹⁰⁶ Open source software developers’ incentives encompass a vast range of reasons, including ‘own use benefits, complementarity with proprietary products sold in the market, signaling, education, [achieving commons standards/network externalities] and social psychological motives such as altruism or simple enjoyment.’¹⁰⁷ In addition, commercial and hobbyist contributions have equally characterised open source software with an increasing switch to commercial motivations in recent times.

Of course, code can be released subject to licence restrictions. Licences applied to open source software make the open-source eco-system a contractually reconstructed commons. The Berkeley Software Distribution (BSD) licence and the GNU GPL¹⁰⁸ are among the most common open source software licences. In fact, they entail a substantially different approach to the distribution of open source software. The GPL is a viral licence, whereas the BSD, or other Open Source licences, are not. A viral licence obligates a further developer of

¹⁰⁴ Steven Weber, *The Success of Open Source* (Harvard U Press 2004) 1. See also John P. Ulh  i, ‘Open Source Development: A Hybrid in Innovation and Management Theory’ (2004) 42 *Mgmt Decision* 1095 (discussing the more general case of open source development in several industrial sectors – such as the iron, sport equipment and software industry – and contrasting open source models with private property theory, which may see open source or non-proprietary knowledge as an anomaly).

¹⁰⁵ Maurer and Scotchmer, ‘Open Source Software’ (n 92) 4 (noting that source code is typically not disclosed in either copyrighted software or software patents).

¹⁰⁶ For a discussion and collection of empirical data regarding the motivations, personal attributes and behavioural patterns of those who are engaged in producing free/libre and open source software (FLOSS), see Paul A David and Joseph Shapiro, ‘Community-based Production of Open Source Software: What do we know about the developers who participate?’ 20 *Inf. Econ. & Pol’y* 364 (2008); Stephen M Maurer and Suzanne Scotchmer ‘Open Source Software: The New Intellectual Property Paradigm’ (2006) NBER Working Paper Series Working Paper 12148, 4-15 <<http://www.nber.org/papers/w12148>> accessed 16 April 2013; Karim R Lakhani, Robert C Wolf, ‘Why Hackers Do What They Do: Understanding Motivation and Effort in Free/Open Source Software Projects’ in Joseph Feller and others (ed): *Perspectives on Free and Open Source Software* (MIT Press 2005) 3-23; Rishab A Ghosh and others, *Free/Libre and Open Source Software: Survey and Study* (University of Maastricht Institute of Infonomics and Berlecon Research GmbH 2002) <<http://www.math.unipd.it/~bellio/FLOSS%20Final%20Report%20-%20Part%204%20-%20Survey%20of%20Developers.pdf>> accessed 16 April 2013.

¹⁰⁷ Maurer and Scotchmer, ‘Open Source Software’ (n 92) 4.

¹⁰⁸ See GNU General Public Licence <<https://gnu.org/licenses/gpl.html>>.

the code to make it available under the same licensing terms. Instead, the Berkeley Software Distribution licence requires users to give attribution credit but does not prohibit commercial use or development. Basically, the essential difference between Open Source and Free Software is that, with the exception of the requirement to provide source code, the definition of Open Source is only concerned with what a licence may require,¹⁰⁹ whereas the Free Software definition requires, for a software to be free, that all four freedoms must be exercised.¹¹⁰ In this respect, the Free Software requires that, if you reuse the source code, the entire result must also be distributed as Free Software. Therefore, if a user modifies and/or incorporates Free Software into another work, the user is forbidden to further restrict the ability of any 'downstream' users from modifying, using or redistributing the software and the same rights that were originally given by the GNU GPL licence must apply to any 'downstream' users.¹¹¹ These different licensing regimes are closely related to the diverse philosophical models inspiring FSF and OSI mentioned above. The tension in the free/open source software movement between anti-propertarian radicalism and commercial interests may also serve as a learning experience for the OA movement in academic publishing.¹¹² In fact, the emphasis on commercial concerns seems to have served well the recent expansion of open source on a more massive scale, while free-software extremism seems to have been less successful.

1.3.2 Creative Commons

From the free software/open source movement, the open source concept has spread to other domains, usually governed by intellectual property rules. In this respect, Creative Commons (CC) has been another example of a practical implementation of the return of the

¹⁰⁹ See Open Source Initiatives, Open Source Definition <<http://opensource.org/docs/osd>> accessed 30 April 2013.

¹¹⁰ See The Free Software Definition (n 98). See also Richard Stallman, 'Why "Free Software" is better than "Open Source" (GNU Operating System) <<http://www.gnu.org/philosophy/free-software-for-freedom.html>> accessed 15 July 2013.

¹¹¹ In practice the difference between Open Source and Free Software is minimal and the vast majority of the open source software is also free software, with the only relevant exception of the phenomenon of 'tivoization.' Tivoization, coined by Richard Stallman in reference to TiVo's use of the GNU GPL licence, refers to a situation in which a software is designed to run on a particular device and that device is designed to prevent modified versions of the software from actually working, therefore preventing users from enjoying one of the freedoms provided in the Free Software definition. See Richard Stallman, Why Open Source Misses the Point of Free Software (GNU Operating System) <<http://www.gnu.org/philosophy/open-source-misses-the-point.html>> accessed 30 April 2013. The practice of tivoization prompted a reaction from the FSF and led to the development of the GPL Version 3, including among its goals also that of preventing tivoization. See Richard Stallman, 'Transcript of Richard Stallman on GPLv3 in Brussels, Belgium; 1st of April 2007' (Free Software Foundation Europe, 4 April 2007) <<http://fsfe.org/campaigns/gplv3/brussels-rms-transcript#tivoisation>> accessed 15 July 2013.

¹¹² See Marc Scheufen, 'What Scientists Can Learn from the Penguin: Open Access and Open Source' (Annual Conference of SERCI, Bilbao, Spain, 2011) <<http://www.serci.org/2011/Scheufen.pdf>> accessed 16 March 2013.

gift and OA in the digital domain.¹¹³ Creative Commons was founded in 2001 by scholars, technologists and entrepreneurs as a reaction to the dramatic expansion of copyright terms and coverage.¹¹⁴ The goal of the organisation is to develop and support ‘legal and technical infrastructure that maximizes digital creativity, sharing and innovation.’¹¹⁵

To this end, CC has developed a series of machine-readable licences that users can choose from and attach to their own creations. The licences communicate which rights the users reserve or waive for the benefit of recipients and other creators. In this respect, CC has labelled its licences as ‘some rights reserved.’¹¹⁶ The ‘some rights reserved’ approach, as opposed to the traditional copyright ‘all rights reserved’ approach, makes CC a contractually reconstructed commons.¹¹⁷ Initially, the core CC licences were drafted according to United States Copyright law and were later ported to different copyright legislation around the world, as part of the Creative Commons International porting project.¹¹⁸ The CC licences incorporate a ‘three-layer’ design.¹¹⁹ Each licence includes a traditional legal tool incorporating legalistic language and formulas, a human readable version of the licence summarising the terms of the licence in a user-friendly manner, and a machine-readable

¹¹³ See Catherine Casserly and Joi Ito, *The Power Of Open* (Creative Commons 2011); Adrienne K Goss, ‘Codifying a Commons: Copyright, Copyleft, and the Creative Commons Project’ (2007) 82 Chi-Kent L Rev 963; Lawrence Lessig, ‘The Creative Commons’ (2003) 55 Florida L Rev 763.

¹¹⁴ For a history of the movement and its rationale, see Lynn M Forsythe and Deborah J Kemp, ‘Creative commons: for the common good?’ (2009) 30 (2) U La Verne L Rev 346; Marc Garcelon, ‘An Information Commons? Creative Commons and Public Access to Cultural Creations’ (2009) 11 New Media Society 1307.

¹¹⁵ Creative Commons, Mission <<http://creativecommons.org>> accessed 16 April 2013.

¹¹⁶ See Gary Stix, ‘Some Rights Reserved: Cyber-law Activists Devise a Set of Licenses for Sharing Creative Works’ (2003) 288 (3) Scientific American 46. See also Mira T Sundara Rajan, ‘Creative Commons: America’s Moral Rights?’ (2011) 21 Fordham Intell Prop Media & Ent. L J 905 (discussing the moral rights implications of four movements that represent distinctive manifestations of free access principles, including Creative Commons, Free Software, Wikipedia and Google books and arguing that ‘[i]ndeed, the moral rights approach to creative works is the foundation of the CC licence’ and ‘[t]he provisions of the Creative Commons licenses closely approximate the legislative provisions of moral rights to be found in the laws of countries outside the United States’).

¹¹⁷ See Prodomos Tsiavos, Edgar Whitley, ‘Open Sourcing Regulation: The Development of the Creative Commons Licences as a Form of Commons Based Peer Production’ in Danièle Bourcier and others (eds), *Intelligent Multimedia - Managing Creative Works in a Digital World* (European Press Academic Publ 2010) 89-114.

¹¹⁸ See Catharina Maracke, ‘Creative Commons International: The International Licence Porting Project’ (2010) 1 (1) JIPITEC 4 <<http://www.jipitec.eu/issues/jipitec-1-1-2010/2417>> accessed 30 April 2013. See also Uma Suthersanen, ‘Creative Commons – the other way?’ (2007) 20(1) Learned Publishing 59 (discussing the first known decision upholding a CC licence in a relation to photographs made available to the public on an online sharing website and analysing the structure of the CC licensing regime in England and Wales); *Jacobsen v Katzer* 535 F 3d 1373 (Fed Cir 2008) remanded 609 F. Supp. 2d 925 (N D Cal 2009) (discussing the relationship between CC licences and contracts in the US and construing the terms of the licence as equivalent to the conditions of a contract, therefore binding upon any user of the work).

¹¹⁹ See Creative Commons, Licences <<http://creativecommons.org/licenses>> accessed 16 April 2013.

version of the licence. The machine-readable version summarises the terms of each licence in a standardised way that software systems, search engines and other kinds of technology can understand.¹²⁰ In short, the CC licence is affixed with electronic tags so that a browser can find copyrighted items pertaining to the various CC licensing categories. The CC licensing platform includes four core types of licences: attribution (BY), non-commercial (NC), no derivatives (ND) and share alike (SA).¹²¹ The types can be grouped together in more or less restrictive fashions. The CC also offers the opportunity to circulate the work with no conditions attached by ‘dedicating’ the copyright to the public domain. This is done through the Creative Commons CC0 Licence and the Public Domain Mark. The Public Domain Mark was released in October 2010 by Creative Commons as a tool enabling works free of known copyright restrictions to be labelled and easily discovered over the Internet.¹²² The Public Domain Mark complements the Creative Commons CC0 public domain dedication which allows authors to relinquish their rights prior to copyright expiration.¹²³

CC licensing has expanded relentlessly in the last few years with hundreds of millions of CC licensed works available on the Internet. Major users, such as Al Jazeera, Flickr, Wikipedia, Google, or the White House, have adopted CC licences.¹²⁴ Again, of special interest given the core focus of our research, open access journals, such as those published by the Public Library of Science, have been published under CC licences. Increasingly, governments are considering turning to the use of CC licensing to enable open access to public sector information and publicly funded research.¹²⁵ In this respect, governments have come to realise that the wide dissemination of the research they have produced or supported can

¹²⁰ See Creative Commons Rights Expression Language (CC REL) <http://wiki.creativecommons.org/CC_REL> accessed 30 April 2013.

¹²¹ See Tony Simmonds, ‘Common Knowledge? The Rise of Creative Commons Licensing’ (2010) 10(3) Legal Information Management 162 (analysing the six CC licences).

¹²² See Diane Peters, ‘Improving Access to the Public Domain: the Public Domain Mark’ (Creative Commons News, October 11, 2010) <<http://creativecommons.org/weblog/entry/23830>> accessed 30 April 2013.

¹²³ See About CC0 — ‘No Rights Reserved’ <<http://creativecommons.org/about/cc0>> accessed 30 April 2013.

¹²⁴ See Creative Commons, Who Uses CC? <<http://creativecommons.org/who-uses-cc>> accessed 30 April 2013.

¹²⁵ See Anne Fitzgerald, Neale Hooper and Brian Fitzgerald, ‘The Use of Creative Commons Licensing to Enable Open Access to Public Sector Information and Publicly Funded Research Results. An Overview of Recent Australian Developments’ in Danièle Bourcier and others (eds), *Intelligent Multimedia - Managing Creative Works in a Digital World* (European Press Academic Publ. 2010) 151-174 (discussing the experience of governments in Australia in applying CC licences to public sector information in a context in which most of the materials and information produced or funded by the government is subject to copyright; in this respect the Australian experience can be easily translated to the UK and European context).

‘stimulate economic innovation, scientific progress, education, and cultural development’¹²⁶ and CC licences have been seen as a possible tool to promote that dissemination.

Some authors, including Niva Elkin-Koren, have criticised Creative Commons’ strategy for being entirely dependent upon a proprietary regime and deriving its legal force from that regime.¹²⁷ In Elkin’s view, the dependence on copyright may interfere with the goal of promoting a core perception of freedom of information, while working towards the development of a sustainable alternative to copyright. Elkin concludes that the reliance on property rights and on viral contracts to promote free culture, without a commitment to a single standard for freedom of information, leaves the CC’s strategy only ‘with the single unifying principle which empowers authors to govern their works.’¹²⁸ The lack of standardisation and the proliferation of contractual terms – Elkin argues – could strengthen the proprietary regime in information by increasing uncertainty and end-users’ costs in determining the rights attached to any specific work.¹²⁹ Again, other noteworthy critiques have specifically targeted the non-commercial feature of some CC licences as being incompatible with free knowledge databases like Wikipedia, open media archives and open source projects, which explicitly allow and encourage commercial use.¹³⁰

1.3.3 Wikis and Wikipedia

Wikis are collaborative online environments where users are allowed to add, modify or delete its content and may serve many different purposes.¹³¹ Most wikis are the result of

¹²⁶ David Bollier, *Viral Spiral: How the Commoners Built a Digital Republic of Their Own* (New Press 2008) 192 <<http://www.viralspiral.cc>> accessed 30 April 2013.

¹²⁷ See Niva Elkin-Koren, ‘Exploring Creative Commons: A Skeptical View of a Worthy Pursuit’ in Lucie Guibault and P. Bernt Hugenholtz (eds), *The Future of the Public Domain: Identifying the Commons In Information Law* 325-345 (Kluwer Law International 2006); Niva Elkin-Koren, ‘What Contracts Can’t Do: The Limits of Private Ordering in Facilitating a Creative Commons’ (2005) 74 *Fordham L Rev* 101. See also, discussing a similar set of critiques, David Berry, ‘On the “Creative Commons”: A Critique of the Commons without Commonality’ (*Free Software Magazine*, 15 May 2005) <<http://fsmsh.com/1155>> accessed 30 April 2013; Susan Corbett, ‘Creative Commons Licences, the Copyright Regime and the Online Community: Is there a Fatal Disconnect?’ (2011) 74(4) *The Modern L Rev* 503 (arguing that because CC licences operate within the traditional copyright system there is a disconnect between CC and the online community, whose norms and expectations in relation to online works conflict with the legal environment provided by copyright law).

¹²⁸ Elkin-Koren, ‘Exploring Creative Commons’ (n 127) 326.

¹²⁹ *Ibid.*

¹³⁰ See Erik Möller, ‘The Case for Free Use: Reasons Not to Use a Creative Commons -NC License’ in Bernd Lutterbeck, Matthias Barwolff and Robert A. Gehring (eds), *Open Source Jahrbuch 2006* (Lehmanns Media 2006). See also, for other pitfalls in CC licensing, Zachary Katz, ‘Pitfalls of Open Licensing: an Analysis of Creative Commons Licensing’ (2006) 46(3) *Idea* 391.

¹³¹ See Tapscott and Williams, *Wikinomics* (n 81); Anja Ebersbach, *Wiki: Web Collaboration* (Springer Science+Business Media 2008); Bo Leuf, *The Wiki Way: Quick Collaboration on the Web* (Addison-Wesley 2001); Stewart Mader, *Wikipatterns* (John Wiley & Sons 2007); Mark Cooper, ‘From Wifi to Wikis and Open Source:

collaborative and cumulative creativity and authorship.¹³² Wiki environments are another quintessential example of an emerging peer-based gift/sharing economy, whose end-result lies in the creation of a cultural commons.¹³³

Wikipedia is a combination of the words wiki and encyclopedia. Launched in 2001 by Jimmy Wales and Larry Sanger, Wikipedia takes the wiki collaborative ethos to the global ubiquitous encyclopedia level.¹³⁴ Wikipedia is a multilingual, open access, crowd-funded encyclopedia edited collaboratively by volunteers around the world. With more than 26 million articles in 286 languages, Wikipedia's numbers are growing steadily. By way of example, the English version has grown from 3.5 million articles in 2011 to 4.2 million in May 2013.¹³⁵ Wikipedia has other multilingual free-content sister projects, including Wiktionary, Wikibooks and Wikinews.¹³⁶ Collaborative authorship and social editing in Wikipedia and wiki environments represent an increasingly influential model for content creation and dissemination, so that commentators are now talking about 'wikinomics'.¹³⁷

The rationale for volunteers' contributions to Wikipedia has been studied, although not yet in as comprehensive a manner as open source software contributors. Wikipedia contributors and editors are usually uncompensated, although contributions take time and knowledge, therefore literature has tried to investigate the non-monetary incentives at work among Wikipedians. Studies have looked at profiles of individuals contributing to Wikipedia,

The Political Economy of Collaborative Production in the Digital Information Age' (2006) 5 J Telecomm & High Tech L 125.

¹³² See Shun-ling Chen, 'Collaborative Authorship: From Folklore to the Wikiborg' (4S Annual Meeting, University of Tokyo, Tokyo, Japan, 25 Aug 2010) <http://www.allacademic.com/meta/p422750_index.html> accessed 30 April 2013; Adam Hyde, Experiences in Open Publishing (Wikimania, Panel 'Authorship, Copyright, and the Wikiborg,' 27 August 2009), <<http://lists.flossmanuals.net/pipermail/discuss-flossmanuals.net/2009-August/002096.html>> accessed 30 April 2013.

¹³³ For a discussion of Wikipedia and wiki environments as a sharing economy and a cultural commons, see Madison, Fisherman and Strandburg, 'Constructing Commons in the Cultural Environment' (n 71) 657; Lawrence Lessig, *Remix: Making Art and Commerce Thrive in the Hybrid Economy* (Bloomsbury 2008) 156-172.

¹³⁴ See Nicolas Jullien, 'What We Know About Wikipedia: A Review of the Literature Analyzing the Project(s)' (2012) SSRN <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2053597> accessed 7 May 2013 (offering a complete literature review on Wikipedia related projects).

¹³⁵ See Wikipedia, Wikipedia: Size of Wikipedia >https://en.wikipedia.org/wiki/Wikipedia:Size_of_Wikipedia> accessed 7 May 2013; Wikipedia Statistics <<http://stats.wikimedia.org/EN>> accessed 7 May 2013. See also Shyong K Lam and J Riedl, 'The Past, Present, and Future of Wikipedia' (2011) 44(3) Computer 87 (examining the size of Wikipedia and how it has evolved over the years and hinting also at the challenge of shifting the focus from quantity to quality).

¹³⁶ See Wiktionary <<http://www.wiktionary.org>> accessed 15 July 2013; Wikibooks <<http://www.wikibooks.org>> accessed 15 July 2013; Wikinews <http://en.wikinews.org/wiki/Main_Page> accessed 15 July 2013.

¹³⁷ See Tapscott and Williams, *Wikinomics* (n 81).

comparing the influence of cultural differences between national contributors,¹³⁸ focusing on personal characteristics of contributors,¹³⁹ and comparing motivations associated with high and low levels of contribution.¹⁴⁰ Additionally, Forte and Bruckman investigate why people write for Wikipedia even when the encyclopedia does not provide bylines to credit authors and suggest ‘softer’ incentives such as engagement in desirable activities.¹⁴¹ Running an empirical analysis, Yang and Lai have concluded that internal self-concept-based motivation is the key motivation for knowledge sharing on Wikipedia.¹⁴² According to Yang and Lai’s results, the principal reason for Wikipedians to share knowledge is a ‘force that drives individuals to pursue an activity that meets their inherent standards’ rather than ‘adopting an activity that is congruent with the expectations of a reference group’.¹⁴³

Content reliability is one of the most widely discussed topics in research related to Wikipedia, and critiques related to Wikipedia’s reliability have been a constant issue. The completeness and accuracy of Wikipedia’s articles have been placed under scrutiny by several authors, often noting that Wikipedia may be biased by personal viewpoints.¹⁴⁴ In this respect, editorial wars have been a common feature of the editing process on Wikipedia in

¹³⁸ See Ulrike Pfeil, Panayiotis Zaphiris and Chee S Ang, ‘Cultural Differences in Collaborative Authoring of Wikipedia’ (2006) 12(1) J Computer-Mediated Comm 88 <<http://jcmc.indiana.edu/vol12/issue1/pfeil.html>> accessed 7 May 2013 (revealing cultural differences in the style of contributions across the gaming cultures investigated that are similar to those observed in the physical world).

¹³⁹ See Yair Amichai-Hamburger, Naama Lamdan, Rinat Madiel, and Tsahi Hayat, ‘Personality Characteristics of Wikipedia Members’ (2008) 11(6) CyberPsychology & Behavior 679 (finding that Wikipedia members locate their real me on the Internet more frequently compared with non-Wikipedia members and agreeableness, openness, and conscientiousness were lower for the Wikipedia members than non-members).

¹⁴⁰ See Oded Nov, What motivates Wikipedians? (2007) 50(11) Communications of the ACM 60.

¹⁴¹ See Susan Bryant, Andrea Forte and Amy Bruckman, ‘Becoming Wikipedian: Transformation of Participation in a Collaborative Online Encyclopedia’ (GROUP: International Conference on Supporting Group Work, Sanibel Island, 2005) 1-10. Cf. Jon M Garon, *Wiki Authorship, Social Media, and the Curatorial Audience*, (2010) 1 Harv. J. Sports Ent. L. 95 (noting that the lack of attribution may run counter to the developing social networking expectations and suggesting that collaborative authorship must adapt its normative expectations regarding attribution).

¹⁴² See Heng-Li Yang and Cheng-Yu Lai, ‘Motivations of Wikipedia Content Contributors’ (2010) 26(6) Computers in Human Behavior 1377.

¹⁴³ Ibid 1378.

¹⁴⁴ See Shane Greenstein and Zhu Feng, ‘Is Wikipedia Biased?’ (2012) 102(3) American Econ Rev 343 (discussing Democrat slant on Wikipedia, which diminished during Wikipedia’s decade of experience due to the entry of articles with opposite slants); Cindy Royal and Deepina Kapila, ‘What’s on Wikipedia, and What’s Not? Assessing completeness of information’ (2009) 27(1) Social Science Computer Rev 138–148 (concluding that Wikipedia is more a socially produced document than a value-free information source and it reflects the viewpoints, interests and emphases of the people who use it); ‘NIDA Versus Wikipedia’ (2007) 315(5813) Science 743 (reporting the story of an anonymous employee at the U.S. National Institute on Drug Abuse (NIDA) repeatedly removing controversial sections of an article on NIDA and replacing them with eulogistic statements); Neil L Waters, ‘Why You Can’t Cite Wikipedia in my Class’ (2007) 50(9) Communications of the ACM 15 (noting that Wikipedia’s method of adding information risks conflating facts with popular opinion).

past years.¹⁴⁵ However, these edit wars have been a self-correcting mechanism that eliminates much inaccuracy.¹⁴⁶ Increasingly, opposition to Wikipedia as a learning tool in academic settings has become more lenient, if the necessary countermeasures are applied.¹⁴⁷ Still, Wikipedia seems to be perceived as less credible compared with more expertly provided online encyclopedic information,¹⁴⁸ although studies tend to demonstrate that accuracies and inaccuracies in Wikipedia are similar to those of the more academically qualified counterparts.¹⁴⁹ Literature's conclusions on Wikipedia's accuracy and reliability may serve as a useful tool to address the discussion on the possible migration from highly reputed traditional academic reviews to open access journals.

Moreover, the adoption of Wikipedia in the academic community has been discussed. PLoS Computational Biology, for example, has launched a new type of peer-reviewed article, written in the style of Wikipedia, which, once accepted, is to be published in the PLoS review, with the text being uploaded to Wikipedia shortly thereafter and open to the usual editing process.¹⁵⁰ Lu and Askin have compared the processes of publishing a peer-reviewed

¹⁴⁵ See Taha Yasseri and others, 'Dynamics of Conflicts in Wikipedia' (2012) 7(6) PLoS One <<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3380063/pdf/pone.0038869.pdf>> accessed 1 May 2013 (concluding that edit wars are mainly fought by few editors only).

¹⁴⁶ Reid Goldsborough, 'Truth testing on the Internet' (2012) 39(4) Teacher Librarian 68, 68. See also Mohammad M Rahman, 'An Analysis of Wikipedia' (2008) 9(3) JITTA 81 (noting that '[q]ualitatively, Wikipedia's definition as a public good, combined with free-riding and free-editing helps to maintain the reliability of Wikipedia').

¹⁴⁷ See Annette Lamb and Larry Johnson, 'Wicked or Wonderful: Revisiting Wikipedia' (2013) 40(4) Teacher Librarian 68; Purcell, Kristen and others, *How Teens Do Research in the Digital World* (Pew Internet 2012) <<http://pewinternet.org/Reports/2012/Student-Research.aspx>> accessed 7 May 2013; Kathryn Zickuhr and Lee Rainie, *Wikipedia, Past and Present* (Pew Internet 2011) <<http://www.pewinternet.org/Reports/2011/Wikipedia.aspx>>; Diane Murley, 'In defense of Wikipedia' (2008) 100 L Librarian J 593 (arguing that research instructors should teach students the proper use of Wikipedia, rather than discouraging its use).

¹⁴⁸ See Andrew J Flanagan and Miriam J Metzger, 'From Encyclopædia Britannica to Wikipedia: Generational Differences in the Perceived Credibility of Online Encyclopedia Information' (2011) 14(3) Info Comm & Soc 355.

¹⁴⁹ See Nicola J Reavley and others, 'Quality of Information Sources about Mental Disorders: A Comparison of Wikipedia with Centrally Controlled Web and Print Sources' (2012) 42(8) Psychological Medicine 1753; Malolan S. Rajagopalan and others, 'Patient-oriented Cancer Information on the Internet: A Comparison of Wikipedia and a Professionally Maintained Database' (2011) 7(5) J Oncology Practice 1; Adam R Brown, 'Wikipedia as a Data Source for Political Scientists. Accuracy and Completeness of Coverage' (2011) 44(2) PS Political Science and Politics 339; Carol A Haigh, 'Wikipedia as an Evidence Source for Nursing and Healthcare Students' (2011) 31(2) Nurse Education Today 135; Jim Giles, 'Internet Encyclopaedias Go Head to Head' (2005) 15 Nature 438. But see Lucy Holman Rector, 'Comparison of Wikipedia and Other Encyclopedias for Accuracy, Breadth, and Depth in Historical Articles' (2008) 36(1) Reference Services Rev 7 (finding Wikipedia less accurate than other sources).

¹⁵⁰ See Rosemary Dickin, Bridging the Journal-Wikipedia Gap (*PLoS Blogs*, 20 April 2012) <<http://blogs.plos.org/plos/2012/04/bridging-the-journal-wikipedia-gap>> accessed 7 May 2013. In the footsteps of PLoS, the Italian Overlay Journal of Political Philosophy has started a similar experiment with the Italian Wikipedia. See Maria Chiara Pievatolo, 'Scholars, Don't Disregard Wikipedia. Become Wikipedia' (*BTFP Notizie*, 26 July 2012) <<http://btfp.sp.unipi.it/?p=2595>> accessed 7 May 2013. See also, for a proposal for a

article in Wikipedia and the open access journal model.¹⁵¹ Compared with an open access journal model, Wikipedia is less expensive, quicker, more widely read, and offers a wider variety of articles. However, many challenges still remain. As Lu and Askin noted, the website structure is not well suited to academic publications; the site is not integrated with common academic search engines such as Google Scholar or with university libraries; and there are concerns among some members of the academic community about the site's credibility and impact in academia.

Again, two projects have sought to apply open access crowd-sourced production of knowledge to the academic domain in the field of text archiving.¹⁵² Distributed Proofreaders is a project affiliated to Project Gutenberg,¹⁵³ one of the oldest digital library projects, where contributors can proofread text of scanned book pages which have been generated by optical character recognition software and contain errors.¹⁵⁴ Unlike Wikipedia, not all contributors can participate in all stages of proofreading, of which there may be several. Wikisource is a digital library of previously published free-content works that are in the public domain or licensed under terms allowing free copying, modification and reuse, including commercial.¹⁵⁵ As with Distributed Proofreaders, users may proofread the scanned text that has been uploaded on the site with no limitation, as in a traditional wiki environment.

1.3.4 Open Science, Science Commons and Open Patenting

Open Science is the grand scheme within which open access movements have to be 're-comprehended'. As we have mentioned earlier, the notion of open science has a long history, dating back to the sixteenth century. Nonetheless, the post-Renaissance Open Science revolution has been eroded by the relentless propertisation of intellectual entitlements. David underlines the tension of this patronage economy with the modern

Wikipedia peer-reviewed journal from the Wikimedia website, Wikimedia, Proposal: Journal (A peer-review journal to allow/encourage academics to write Wikipedia articles) <[http://strategy.wikimedia.org/wiki/Proposal:Journal %28A peer-review journal to allow/encourage academics to write Wikipedia articles%29](http://strategy.wikimedia.org/wiki/Proposal:Journal_%28A_peer-review_journal_to_allow/encourage_academics_to_write_Wikipedia_articles%29)> accessed 7 May 2013.

¹⁵¹ See Xiao Lu and Nicole Askin, 'Wikipedia for Academic Publishing: Advantages and Challenges' (2012) 36(3) Online Info Rev 359.

¹⁵² See Timothy K Armstrong, 'Crowdsourcing And Open Access: Collaborative Techniques For Disseminating Legal Materials And Scholarship' (2010) 26 Santa Clara Computer & High Tech L J 591; Timothy K Armstrong, 'Rich Texts: Wikisource as an Open Access Repository for the Law and Humanities' (2010) U Cincinnati College of Law Public Law & Legal Theory Series Research Paper 10/09 <<http://ssrn.com/abstract=1566148>> accessed 18 January 2013.

¹⁵³ See Project Gutenberg, Free eBooks, <http://www.gutenberg.org> accessed 7 June 2013.

¹⁵⁴ See Distributed Proofreaders: preserving History One Page at Time <<http://www.pgdp.net/c>> accessed 11 May 2013.

¹⁵⁵ See Wikisource <<http://wikisource.org>> accessed 11 May 2013.

commercial system based on 'the control of knowledge through secrecy or exclusive possession of the right to its commercial exploitation'.¹⁵⁶ David reclaims the efficacy of a public patronage based open science model and call for a rebalance between the Republic of Science and the proprietary technology, as '[t]o pursue the policy path toward the vision of perfected "Intellectual Capitalism" could perversely lead the global enterprise of scientific research [. . .] towards the truly darker past from which western European societies rather fortuitously managed to escape in the seventeenth century'.¹⁵⁷ This balance is precisely the goal that emerging open access movements would like to achieve.¹⁵⁸

Besides the open access to academic literature and scholarship, which lies at the core of open science and is the focus of our review, open access has recently emerged in the field of patentable innovation, under the assumption that excessive patenting stifles innovation,¹⁵⁹ and research data, which have been increasingly privatised and commercialised by new legal rights and mechanism.¹⁶⁰ Leading institutions, including the Royal Society, have highlighted 'the need to grapple with the huge deluge of data created by modern technologies in order

¹⁵⁶ Paul A David, 'The Economic Logic of 'Open Science' and the Balance between Private Property Rights and the Public Domain in Scientific Data and Information: a Primer' in Julie M Esanu and Paul F Uhler (eds), *The Role of Scientific and Technical Data and Information in the Public Domain: Proceedings of a Symposium* (National Academies Press 2003) 19–34, 23 <<http://www.nap.edu/catalog/10785.html>> accessed 10 May 2013.

¹⁵⁷ David, 'The Historical Origins of 'Open Science'' (n 43) 5. See also Paul A David, 'Can 'Open Science' Be Protected from the Evolving Regime of IPR Protections?' (2004) 160(1) *Journal of Institutional and Theoretical Economics* 9, 9–34; Richard R Nelson, 'The Market Economy, and the Scientific Commons' (2004) 33 *Research Policy* 455, 455–471 (discussing the increasing privatisation of the scientific commons).

¹⁵⁸ See Willinsky, 'The Unacknowledged Convergence of Open Source, Open Access, and Open Science' (n 87).

¹⁵⁹ See, in support of this assumption, James Bessen and Michael J Meurer, *Patent Failure: How Judges, Bureaucrats and Lawyers Put Innovators at Risks* (Princeton U. Press 2008) (finally arguing that the cost of litigation and the overall cost of the patent system overcome the advantages); Robin Feldman, 'The Open Source Biotechnology Movement: Is It Patent Misuse?' (2004) 6 *Minn. J L Sci & Tech* 117, 123–25; Heller and Eisenberg, 'Can Patents Deter Innovation?' (n 74); Kyle Jensen and Fiona Murray, 'Intellectual Property Landscape of the Human Genome' (2004) 310 *Science* 239, 239–40; Rebecca S Eisenberg, 'Bargaining over the Transfer of Proprietary Research Tools: Is This Market Failing or Emerging' in Rochelle C Dreyfuss and others (eds), *Expanding the Boundaries of Intellectual Property* (OUP 2001) 223–225; Carl Shapiro, 'Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard-Setting' in Adam B Jaffe and others (eds), *Innovation Policy and the Economy* (MIT Press 2001) 1, 1–2 <<http://faculty.haas.berkeley.edu/shapiro/thicket.pdf>> accessed 7 May 2013. See also Lita Nelsen, 'The Rise of Intellectual Property Protection in the American University' (1998) 279 *Science* 1460, 1461 (noting that the rise in partnership between academia and industry is increasing the inherent tension between academia's goal of disseminating knowledge and industry's goal of controlling and keeping confidential any intellectual property). But see, for a contrary view maintaining that patent thickets either do not exist or do not interfere with the progress of research, John P Walsh and others, 'View from the Bench: Patents and Material Transfers' (2005) 309 *Science* 2002; John P Walsh and others, 'Working Through the Patent Problem' (2003) 299 *Science* 1021; John P Walsh and others, 'Effects of Research Tool Patents and Licensing on Biomedical Innovation' in Wesley M Cohen and Stephen Merrill (eds), *Patents in the Knowledge-Based Economy* (National Academies Press 2003) 285, 340.

¹⁶⁰ See Reichman and Uhler, 'A Contractually Reconstructed Research Commons for Scientific Data in a Highly Protectionist Intellectual Property' (n 88) 135 (discussing the legal tools and mechanism commodifying scientific research data).

to preserve the principle of openness and to exploit data in ways that have the potential to create a *second open science revolution*.¹⁶¹ Also in the case of research data and patentable innovation, parties have attempted to create a ‘science commons’ by pooling together intellectual resources through private agreements. Private firms in the biotechnological and software field have decided to forgo property rights in order to reduce transaction costs.¹⁶² The key assumption is that injecting information into the public domain will preempt property rights of competitors and thus correct in part the market failure caused by the phenomenon of the ‘anti-commons’.¹⁶³ Publicly funded projects have promoted data sharing among scientists that have driven the Human Genome Project and International Haplotype Map Project.¹⁶⁴ Again, proposals have been made for promoting open and collaborative research in the domains of synthetic biology,¹⁶⁵ stem cell research¹⁶⁶ and microbial research.¹⁶⁷

¹⁶¹ See The Royal Society, *Science as an Open Enterprise Final Report* <<http://royalsociety.org/policy/projects/science-public-enterprise/report>> accessed 13 June 2013 (emphasis added). See also Royal Society, *Science as Open Enterprise* (Royal Society June 2012) <http://royalsociety.org/uploadedFiles/Royal_Society_Content/policy/projects/sape/2012-06-20-SAOE.pdf> accessed 13 June 2013; Organization for Economic Co-operation and Development (OECD), ‘Principles and Guidelines for Access to Research Data from Public Funding’ (OECD 2007) <<http://www.oecd.org/sti/sci-tech/38500813.pdf>> accessed 14 June 2007.

¹⁶² See Arti K Rai, ‘Open and Collaborative Research: A New Model for Biomedicine’, in Robert W Hahn (ed), *Intellectual Property Rights in Frontier Industries: Software and Biotechnology* (AEI Press 2005) 131, 140-45; Robert P Merges, ‘A New Dynamism in the Public Domain’ (2004) 71 Chi. L. Rev. 183, 186-191. See also, discussing the ‘genome commons’ and more generally the ‘science commons,’ Jorge L Contreras, ‘Data Sharing, Latency Variables, and Science Commons’ (2010) 25 Berkeley Tech L J 1601. An interesting emerging set of issues in the domain of research data may involve the likelihood of copyright protectability of semantic web ontologies – the structures or hierarchical organisations that define contextual relationships on the semantic web, which is the web designed for finding data, rather than documents. Authors have noted that the ‘ability of the semantic web to annotate and reuse data relies on the social structure of science supporting data sharing as a norm,’ therefore in order not to lose the new immense value that the semantic web may produce in terms data retrieval and reuse, ‘the best practices for the scientific community should include adopting a machine readable license which disclaims copyright protection for publication of public scientific data and assures automation of the integration of ontologies which will maximize easy access to public science materials that can be queried.’ See Andrew Clearwater, ‘The New Ontologies: the Effect of Copyright Protection on Public Scientific Data Sharing Using Semantic Web Ontologies’ (2010) 10 J. Marshall Rev. Intell. Prop. L. 182, 205.

¹⁶³ See *infra* n 74.

¹⁶⁴ See David E Winickoff, Krishanu Saha and Gregory D Graff, ‘Opening Stem Cell Research And Development: A Policy Proposal For The Management Of Data, Intellectual Property, And Ethics’ (2009) 9 Yale J Health Pol’y L & Ethics 52, 101-104; Rai, ‘Open and Collaborative Research’ (n 162) 141-43.

¹⁶⁵ Arti Rai and James Boyle, ‘Synthetic Biology: Caught between Property Rights, the Public Domain, and the Commons’ (2007) 5 PLoS Biology 0389, <<http://www.plosbiology.org/article/info:doi/10.1371/journal.pbio.0050058>> accessed 7 May 2013 (discussing the BioBricks Foundation at MIT, which seeks to coordinate a synthetic biology commons).

¹⁶⁶ See Winickoff, Saha and Graff, ‘Opening Stem Cell Research And Development’ (n 164).

¹⁶⁷ See Jerome H Reichman, Paul F Uhler, and Tom Dedeurwaerdere, *Governing Digitally Integrated Genetic Resources, Data, and Literature: Global Intellectual Property Strategies for the Microbial Research Commons* (CUP, forthcoming 2014); Paul F Uhler (ed), *Designing the Microbial Research Commons: Proceedings of an*

Created as a spinoff of CC, Science Commons attempted to set up a framework to make scientific research 're-useful', enabling 'one-click access to research materials, and integrating fragmented information resources'.¹⁶⁸ Although Science Commons has been discontinued as a stand-alone project and re-integrated with CC, most of the sub-projects that it fathered are still proceeding. In particular, Science Commons – now CC Science – have been exploring new models for licensing patents and know-how and are promoting open innovation.¹⁶⁹ In this context, CC has developed the CC Public Patent Licence,¹⁷⁰ as part of the GreenXchange Project, a collaboration to promote the sharing of know-how and patent technology for solving sustainability and other pressing social problems.¹⁷¹ As indicated in the CC Public Patent Licence, 'the CC Public Patent License is intended to be used as part of a public license offer to license patent rights. A public license offer provides two main benefits: a) it is publicly accessible on the Internet: anyone can read the full terms of the offer; b) it is a "live" offer so that anyone can accept it if they agree to all its terms. To have these benefits, the offer must be openly published, and it must be capable of being accepted by anyone on a non-discriminatory basis and without additional negotiation'.¹⁷²

In any event, although openness in the patent domain seems to be emerging, as Maggiolino and Montagnani have noted, open patenting 'is still a kaleidoscopic phenomenon whose boundaries are unsettled and very much affected by the industry to which the subject matter (or innovation) belongs'.¹⁷³ On the one hand, projects like the Open Invention Network, pooling software patents in order to improve applications for the

International Symposium (National Academies 2011). See also Jerome H. Reichman, 'Formalizing the Informal Microbial Commons: Using Liability Rules to Promote the Exchange of Materials' (2nd COMMUNIA Conference, Turin, 30 June 2009) (discussing the introduction of liability rules to promote the exchange of materials in a globally distributed and digitally integrated research commons); Jerome H Reichman and others, 'Pathways Across the Valley of Death: Novel Intellectual Property Strategies for Accelerated Drug Discovery' (2008) 7 Yale J Health L.Pol'y & Ethics 53.

¹⁶⁸ See Science Commons <<http://sciencecommons.org/about>> accessed 10 May 2013. See also Mandrusiak, 'Balancing Open Source Paradigms' (n 87) 316-330 (discussing pitfalls of the Science Commons project).

¹⁶⁹ See Patent Tools Public Discussion <http://wiki.creativecommons.org/Patent_Tools_Public_Discussion> accessed 10 May 2013. See, for additional discussion on open licences and transfer of patentable innovation and know-how, Feldman Robin and Kris Nelson, 'Open Source, Open Access, and Open Transfer: Market Approaches to Research Bottlenecks' (2008) 7 Nw J Tech & Intell Prop 14; Andrés Guadamuz González, 'Open Science: Open Source Licenses in Scientific Research' (2006) 7 N.C. J. L. & Tech. 321.

¹⁷⁰ See CC Public Patent Licence <http://wiki.creativecommons.org/CC_Public_Patent_License> accessed 10 May 2013.

¹⁷¹ See The GreenXchange: Accelerating Sustainable Innovation Through IP Sharing <<http://greenxchange.cc>> accessed 10 May 2013.

¹⁷² CC Public Patent Licence (n 170).

¹⁷³ Mariateresa Maggiolino and Maria Lilla Montagnani, 'From Open Source Software to Open Patenting – What's New in the Realm of Openness?' (2011) 42(7) IIC 804, 805 (analysing the open patenting phenomenon against the backdrop of Open Source Software). See also Katherine M Nolan-Stevaux, 'Open Source Biology: A Means to Address the Access & Research Gaps' (2007) 23 Santa Clara Computer & High Tech LJ 271.

Linux operating system,¹⁷⁴ and the BiOS Project, which guarantees open access to some patented and not-patented biological materials,¹⁷⁵ in exchange for the right to use the commons, have set up licences including both a ‘non-challenging clause,’ a ‘grant-back clause on improvements’ and a ‘viral clause’ forcing members to assign or license patents included in the pool only subject to the terms of the pool licence. On the other hand, projects like GreenXchange do not seem to be concerned by free riding and do not include a grant-back and viral clause but only non-challenging clauses. In contrast, GreenXchange licensing models provide a path to commercialisation with a scheme of rules for the payment of royalties that the participants have the option of charging.¹⁷⁶

1.4 THE OPEN ACCESS MOVEMENT IN ACADEMIC PUBLISHING

As part of this ongoing discourse about open access and cultural commons, Open Access Publishing (OAP) has been emerging as a global movement that drives the renewed emphasis on open science and the global request for access to knowledge. Open access publishing – or open access to scholarship – endorses the goal of allowing information to flow more freely among researchers and the public at large as a reaction to perceived pitfalls in the present system of circulation of academic knowledge and the dematerialisation of scholarly publishing after the advent of electronic publishing and Internet distribution.¹⁷⁷ The profound interrelation between OAP and digitisation – and more generally the nexus of causality between digitisation and open access – is acutely exposed by Jean Claude Guédon:

¹⁷⁴ See Open Invention Network <<http://www.openinventionnetwork.com>> accessed 10 May 2013.

¹⁷⁵ See BiOS <<http://www.cambia.org.au/daisy/bios/home.html>> accessed 10 May 2013.

¹⁷⁶ The GreenXchange offers the possibility to pledge patents with three different Licence types: (1) Research Non-Exempt (which ‘provides non-profits, such as universities, the freedom to research on the patented technology, improve on it, and patent the improvements for non-commercial use’); (2) Standard (which ‘offers a royalty-free license with which any party can commercially use the patented technology’); (3) Standard PLUS (which ‘offers a license that requires a payment and/or can restrict who can accept the license [. . .] [t]he PLUS is the payment and restrictions that have been added in the public addendum within the [CC Model/Public] Patent License’). See The GreenXchange (n 171).

¹⁷⁷ For a discussion of scholarly electronic communication, see Charles W Bailey, *Scholarly Electronic Publishing Bibliography* (Digital Scholarship 2010) <<http://www.digital-scholarship.org/sepb>> accessed 16 May 2013; Christine L Borgman, *Scholarship in the Digital Age: Information, Infrastructure, and the Internet* (MIT Press 2007) (discussing the ‘revolutionary, discontinuity scenario and the evolutionary, continuity scenario’ as possible reactions to digitisation of scholarship and noting that most likely the scenario falls in between the ‘electronic publishing reform movement’ – claiming inevitable universal adoption of electronic media with all fields converging on the use of the same forums for electronic publications – and the ‘social shaping of technology’ perspective – acknowledging that scholarly communities will influence the development and adoption of different technologies); Rob Kling and Ewa Callahan, ‘Electronic Journals, the Internet and Scholarly Communication’ (2003) 37 Annual Rev of Info Sci & Tech 127 <<https://scholarworks.iu.edu/dspace/bitstream/handle/2022/1087/wp01-04B.html>> accessed 27 January 2013; Carol Tenopir and Donald W King, *Towards Electronic Journals: Realities for Scientists, Librarians and Publishers* (Special Library Association 2000); Robin P Peek & Gregory B Newby (eds), *Scholarly Publishing: The Electronic Frontier* (MIT Press 1996). Tenopir and King, *Towards Electronic Journals* (n 177)

Open Access is not an end in itself; it is merely a symptom of deeper processes linked to the growing role of digitization in our civilization. It is digitization that brings about opportunities for profound shifts in power. Open Access simply defines a battle front that refers to the challenges being thrown at the architectures of control supported by publishers. Like a litmus test, the quest for Open Access reveals an architecture of control on the wane.¹⁷⁸

The open access movement in scholarly publishing was inspired by the dramatic increase in prices for journals and publisher restrictions on the reuse of information. 'Price barriers' and 'permission barriers' have been increasingly turning open access into a new 'principle' in scholarship and research that has been promoted globally.¹⁷⁹ As John Willinsky noted, 'open access could be the next step in a tradition that includes the printing press and penny post, public libraries and public schools. It is a tradition bent on increasing the democratic circulation of knowledge [. . .]'.¹⁸⁰ The advent of 'open access' publishing offers a new model for the operation of scholarly journals, and its promise is reflected in the expanding literature devoted to this pioneering concept.¹⁸¹ As a general rule, open access refers to a publishing model where the research institution or the party financing the research pays for publication and the article is then freely accessible. In particular, open access refers to free and unrestricted world-wide electronic distribution and availability of peer-reviewed journal literature.¹⁸² However, open access to books and monographs seems to be an equally relevant goal of the OAP movement, although at an earlier stage of development.

According to Peter Suber, the *de facto* spokesperson of the OAP movement,¹⁸³ '[o]pen access (OA) is free online access [. . .] OA literature is not only free of charge to everyone with an internet connection, but free of most copyright and licensing restrictions. OA literature is barrier-free literature produced by removing the price barriers and permission

¹⁷⁸ Jean-Claude Guéron, 'A Take on Peter Suber's "The Opening of Science and Scholarship"' (Publius Project Essays and Conversations about Constitutional Moments on the Net Collected by the Berkman Center, 25 June 2008) <http://publius.cc/take_peter_suber%E2%80%99s_%E2%80%99C_opening_science_and_scholarship%E2%80%99D> accessed 16 May 2013.

¹⁷⁹ Willinsky, *The Access Principle* (n 3) See also Peter Suber, *Open Access* (MIT Press 2012) (discussing the emergence of this principle in one of the few book length descriptions dedicated to the subject).

¹⁸⁰ Willinsky, *The Access Principle* (n 3) 30.

¹⁸¹ See Charles W Bailey, *Transforming Scholarly Publishing through Open Access: A Bibliography* (Digital Scholarship 2010) <<http://digital-scholarship.org/tsp/transforming.pdf>> accessed 16 May 2013; Charles W Bailey, *Open Access Bibliography: Liberating Scholarly Literature with E-Prints and Open Access Journals* (Association of Research Libraries 2005) <<http://digital-scholarship.org/oab/oab.htm>> accessed 16 May 2013.

¹⁸² See Budapest Open Access Initiative <<http://www.opensocietyfoundations.org/openaccess>> accessed 16 January 2013. See also Peter Suber, 'Creating an Intellectual Commons through Open Access' (n 90) 171-208.

¹⁸³ See Richard Poydner, 'Suber: Leader of a Leaderless Revolution' (*Information Today*, July/August 2011) <<http://www.infotoday.com/it/jul11/Suber-Leader-of-a-Leaderless-Revolution.shtml>> accessed 16 May 2013.

barriers that block access and limit usage of most conventionally published literature, whether in print or online'.¹⁸⁴ Other authors have stressed that the extent of the OAP notion should be 'very wide indeed' and that 'whenever possible neither use, nor the ability to participate in the fine-tuning of the system, should be restricted to professional scholars'.¹⁸⁵ This notion goes hand in hand with the idea of 'democratizing innovation',¹⁸⁶ initially developed in software communities, meaning a world 'of potential colleagues rather than a universe of passive consumers'.¹⁸⁷

Therefore, the academics' reaction against the 'cost of knowledge' – also known as the serial crisis – is on the rise, especially against the practice of charging 'exorbitant high prices for [. . .] journals' and of 'sell[ing] journals in very large bundles'.¹⁸⁸ As Reto Hilty has noted, the price increase of publishers' products – while publishers' costs have sunk dramatically – has forced the scientific community to react by implementing open access options, because

¹⁸⁴ Peter Suber, 'Creating an Intellectual Commons through Open Access' (n 90) 171.

¹⁸⁵ James Boyle, 'Mertonianism Unbound, Imagining Free, Decentralized Access to Most Cultural and Scientific Material' in Charlotte Hess and Elinor Ostrom (eds), *Understanding Knowledge as a Commons* (MIT Press 2006) 124 <<http://www.scribd.com/doc/27333114/Understanding-Knowledge-as-a-Commons-Theory-to-Practice-2007>> accessed 18 January 2013. Borrowing from the sociology of science, Boyle refers to the term *Mertonianism* to describe a process of free, open inquiry, strongly reliant on the process of peer-review to drive hypotheses closer to an underlying reality. See Robert K Merton, *On Social Structure and Science* (University of Chicago Press 1996). In doing so, Boyle asks 'what impact more open access to cultural and scientific materials, both scholarly and nonscholarly, by individuals and groups *outside* the academy might have on scholarship, culture, and even — though this is more speculative and unlikely — on science.' See also, for similar arguments related to the need of broadly opening access to scholarly research to the general audience, Lessig, 'The Architecture of Access to Scientific Knowledge' (n 4) (noting that the present system of scientific knowledge promotes elite-ment rather than enlightenment, as access to information is restricted to a knowledge elite only); Gavin Yamey, 'Excluding the Poor from Accessing Biomedical Literature: A Rights Violation that Impedes Global Health' (2008) 10(1) *Health and Human Rights* 21, 31 <<http://www.hhrjournal.org/index.php/hhr/article/view/20/88>> accessed 23 April 2013 (discussing specifically the way open access to biomedical literature matters to ordinary citizens and mentioning the example of Sharon Terry, lay person with no formal education and parent of two children diagnosed with the genetic disorder pseudoxanthoma elasticum (PXE), who had to struggle with seemingly insurmountable barriers to access medical literature and ended up contributing a highly valued chart for the disease, co-patented the gene responsible for PXE, wrote scholarly articles on the subject, founded PXE International, a research advocacy organisation for PXE and became the President and CEO of the Genetic Alliance, a coalition of over six-hundred disease-specific advocacy organisations).

¹⁸⁶ See von Hippel, *Democratizing Innovation* (n 94).

¹⁸⁷ Boyle, 'Mertonianism Unbound' (n 185) 140.

¹⁸⁸ See The Cost of Knowledge, Researchers Taking a Stand against Elsevier, <<http://thecostofknowledge.com>> accessed 21 January 2013 (an online initiative collecting support from academics and researchers declaring that they will boycott Elsevier's journals unless they radically change their business practices); 'The Price of Information: Academics are Starting to Boycott a Big Publisher of Journals' *The Economist* (London, 4 February 2012) <<http://www.economist.com/node/21545974>> accessed 16 January 2013. See also Eyal Amiran, 'The Open Access Debate' (2011) 18(1/2) *Symploke* 251 (reporting several other examples of these reactions and boycotts against the cost of knowledge and generally detailing how intense the debate has become in recent years).

antiquated copyright laws have failed to bring about a reasonable balance of interests.¹⁸⁹ Universities, libraries and governments around the world have examined journal prices and availability and expressed dissatisfaction with the nature of the current business model for scientific publishing. In an August 2004 report, the UK House of Commons Science and Technology Committee concluded that ‘provision of [academic] journals in the UK is unsatisfactory [. . .] due to a combination of publishers’ pricing policy and the inadequacy of library budgets’ and ‘the practice of some of the larger commercial publishers of “bundling” content together to be sold as one product is having a negative impact on smaller publishers and on the ability of libraries to purchase the journals required by the community’.¹⁹⁰ The Scottish Confederation of University and Research Libraries together with the National Library of Scotland reached very similar conclusions. In a declaration known as the ‘Scottish Declaration on Open Access’, issued in October 2004, they noted that the ‘subscription-based system severely restricts access to leading edge research’ and that ‘[t]he kind of profit that is being made by some of the very large commercial publishers is inappropriate in that it is predicated on publicly funded research’.¹⁹¹ In the United States, for example, Cornell University noted with disapproval in a 2003 resolution on university library policies that its library budget has increased by 149% from 1986 to 2001, while the number of periodicals purchased grew by only 5%.¹⁹²

In a recent article published by *The Guardian*, George Monbiot highlighted the unfairness of the system of academic publishing by noting, with specific reference to academic publishers, such as Elsevier, Springer or Wiley-Blackwell, that ‘[w]hat we see here is pure rentier capitalism: monopolising a public resource then charging exorbitant fees to use it. Another term for it is economic parasitism. To obtain the knowledge for which we have

¹⁸⁹ See Reto M. Hilty, ‘Copyright Law and the Information Society – Neglected Adjustments and Their Consequences’ (2007) 38(2) ICC 135 (also noting, however, that it is questionable whether an essential achievement of our modern society – the division of labour – should be overturned).

¹⁹⁰ Science and Technology Committee, *Scientific Publications: Free for all?* (HC 2003-04, 399-I) 97 <<http://www.publications.parliament.uk/pa/cm200304/cmselect/cmsctech/399/399.pdf>> accessed 16 May 2013.

¹⁹¹ Unfortunately, it seems that the full declaration is no longer available online. For the cited excerpts, see ‘The Scottish Declaration on Open Access’ (Open Access News, 15 October 2004) <<http://legacy.earlham.edu/~peters/fos/2004/10/scottish-declaration-of-open-access.html>> accessed 23 May 2013; and Richard Wray, ‘Commercial Publishers Face Scottish Open Access Challenge’ (The Guardian, 20 August 2004) <<http://www.guardian.co.uk/media/2004/aug/20/business.pressandpublishing1>> accessed 23 May 2013. See also Appendix 82, Memorandum from the Scottish Confederation of University and Research Libraries (SCURL) <<http://www.publications.parliament.uk/pa/cm200304/cmselect/cmsctech/399/399we100.htm>> accessed 23 May 2013.

¹⁹² See Cornell Faculty Senate Resolution, Resolution regarding the University Library’s Policies on Serials Acquisitions, with Special Reference to Negotiations with Elsevier (17 December 2003) <<http://www.library.cornell.edu/scholarlycomm/resolution2.htm>> accessed 23 May 2013.

already paid, we must surrender our feu to the lairds of learning.”¹⁹³ The parasitism lies in a monopoly over content that the academic publishers do not create and do not pay for. The researchers, willing to publish with reputable journals, surrender their copyright for free. Most of the time, the production of that very content – now monopolised by the academic publishers – was funded by the public, through government research grants and academic incomes.

Equally, permission hurdles involved with access to and re-use of scholarship have played a relevant role in the OAP movement. Having his draft articles removed from the Social Science Research Network (SSRN) at the request of the copyright-holder, the California Law Review, after his work had been published and made available in commercial databases, Dan Hunter coined the term ‘walled gardens’ to refer to permission barriers of academic publishing.¹⁹⁴ These databases create the ‘walled gardens’ that restrict access to paid subscribers. As Nancy Kranich, former president of the American Library Association, has noted, the ‘walled garden’ promotes a process of online enclosure that poses ‘an increasing threat to democratic principles of informed citizens and academic principles of building on the shoulders of giants’.¹⁹⁵

The reaction to price and permission barriers to scientific scholarship has turned into an open access movement in scholarly publishing,¹⁹⁶ which now has a long history dating back to projects in the 1990s and fast developing in the last decade.¹⁹⁷ Since that time on, the

¹⁹³ See George Monbiot, ‘Academic Publishers Make Murdoch Look like a Socialist’ *The Guardian* (London, 29 August 2011) <<http://www.guardian.co.uk/commentisfree/2011/aug/29/academic-publishers-murdoch-socialist>> accessed 21 January 2013. See also Richard Smith, ‘The Highly Profitable but Unethical Business of Publishing Medical Research’ (2006) 99 J R Soc Med 452 (discussing in similarly strong terms the unethical nature of the business of publishing medical research).

¹⁹⁴ See Dan Hunter, ‘Walled Gardens’ (2005) 62 Wash & Lee L. Rev. 607 (examining the open-access movement in scholarly publishing generally and in relation to law review publishing). But see Salil K Mehra, Paradise is a Walled Garden - Trust, Antitrust and User Dynamism, 18 Geo. Mason L. Rev. 889 (2011) (discussing whether walled gardens may in fact be a kind of creative paradise that spawns significant user dynamism).

¹⁹⁵ Nancy Kranich, ‘Countering Enclosure: Reclaiming the Knowledge Commons,’ in Charlotte Hess and Elinor Ostrom (eds), *Understanding Knowledge as a Commons* (MIT Press 2006) <<http://www.scribd.com/doc/27333114/Understanding-Knowledge-as-a-Commons-Theory-to-Practice-2007>> accessed 18 January 2013.

¹⁹⁶ See John MacColl, ‘The Open Access Movement in Scholarly Publishing’ (2002) 8 E-Law Rev 5

¹⁹⁷ See, for a complete historical timeline of the open access movement, Peter Suber, Timeline of the Open Access Movement <<http://legacy.earlham.edu/~peters/fos/timeline.htm>> accessed 27 January 2013. Besides the emergence of open databases, another influential precursor of the OAP movement may be identified in the Taxpayer Asset Project, and the related Crown Jewels Campaign, creating a grassroots campaign through Internet e-mail listservers in 1990 to demand access to federally owned databases in the United States, as a reaction to the Reagan administration’s policies privatising access to digital versions of government information. In particular, the Crown Jewels Campaign focused on access to highly valuable federal databases such as a database of corporate disclosure documents compiled by the U.S. Securities and Exchange Commission, the Medline database of biomedical articles maintained by the National Institutes of Health, the federal database of patent filings held by the U.S. Patent and Trademark Office, the full text of bills pending

movement has grown in importance through a number of initiatives that have shaped its principles and goals, enhanced practical implementations and promoted global attention and related policy reactions.

1.4.1 The Three Bs: Budapest, Berlin and Bethesda

A major theoretical boost to the OAP movement was given over a 20-month period from 2001 to 2003 by three initiatives, and their related declarations, that came to be known as the 'Three Bs'. The first was the Budapest Initiative in February 2002, then the June 2003 Bethesda Statement on Open Access Publishing, and finally the October 2003 Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities. Before turning to a brief description of these three main OAP declarations, it is also worth mentioning, as part of the theoretical process that led to the definition of the general principles shaping the OAP movement, the Statement on Open Access to Scholarly Literature and Research Documentation adopted by the International Federation of Library Associations (IFLA) in the Hague on 5 December 2003.¹⁹⁸

The Budapest Open Access Initiative (BOAI) was the result of a Conference organised in Budapest by the Open Society Institute, a branch of the Open Society Foundations, a philanthropic endeavour created by George Soros, in December 2001.¹⁹⁹ The BOAI Declaration was issued shortly thereafter on 14 February 2002. The purpose of the BOAI was to 'accelerate progress in the international effort to make research articles in all academic fields freely available on the internet'. From the Budapest Open Access Initiative stems an oft-quoted definition of OA that includes free reuse and redistribution of OA material by anyone:

By 'open access' to this literature, we mean its free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. The only constraint on reproduction and distribution, and the only role for copyright in this

before the U.S. Congress, and databases of federal court opinions. See Manon A Ress, 'Open-Access Publishing: From Principles to Practice' in Gaëlle Krikorian and Amy Kapczynski (eds), *Access to Knowledge in The Age of Intellectual Property* (Zone Books 2011) 478-479.

¹⁹⁸ See International Federation of Library Associations (IFLA), IFLA Statement on Open Access to Scholarly Literature and Research Documentation <<http://www.ifla.org/publications/ifla-statement-on-open-access-to-scholarly-literature-and-research-documentation>> accessed 13 June 2013.

¹⁹⁹ See Budapest Open Access Initiative, <<http://www.budapestopenaccessinitiative.org>> accessed 23 January 2013. See Also Kristin Yiotis, 'The Open Access Initiative: A New Paradigm for Scholarly Communications' (2005) 24(4) Information Technology And Libraries 157, 157-162.

domain, should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited.²⁰⁰

At the time of the tenth anniversary of the BOAI, the Open Society Foundation launched BOAI 10 including a new set of guidelines and recommendations. The recommendations strengthen and crystallise the advancements that the open access movement has made in the last decade. BOAI 10 seeks the promotion of (i) the development of Open Access policies in institutions of higher education and in funding agencies, (ii) the open licensing of scholarly works, (iii) the development of infrastructure such as Open Access repositories and creating standards of professional conduct for Open Access publishing. The recommendations also establish a new goal of achieving Open Access as the default method for distributing new peer-reviewed research in every field and in every country within ten years' time.²⁰¹

The Bethesda Statement on Open Access Publishing was released on 20 June 2003 by a group of interested parties, including funding agencies, scientific societies, publishers, librarians, research institutions and individual scientists, gathering together at the headquarters of the Howard Hughes Medical Institute in Chevy Chase, Maryland. The Bethesda Statement endorsed the goal of stimulating 'discussion within the biomedical research community on how to proceed, as rapidly as possible, to the widely held goal of providing open access to the primary scientific literature.'²⁰² The Bethesda Statement identified an Open Access Publication as one that meets two conditions:

1. The author(s) and copyright holder(s) grant(s) to all users a free, irrevocable, worldwide, perpetual right of access to, and a license to copy, use, distribute, transmit and display the work publicly and to make and distribute derivative works, in any digital medium for any responsible purpose, subject to proper attribution of authorship, as well as the right to make small numbers of printed copies for their personal use.
2. A complete version of the work and all supplemental materials, including a copy of the permission as stated above, in a suitable standard electronic format is deposited immediately upon initial publication in at least one online repository that is supported by an academic institution, scholarly society, government agency, or other well-established organization that seeks to enable open access,

²⁰⁰ Budapest Open Access Initiative, Read the Budapest Open Access Initiative <<http://www.budapestopenaccessinitiative.org/read>> accessed 23 January 2013.

²⁰¹ See Budapest Open Access Initiative, Ten Years on from the Budapest Open Access Initiative: Setting the Default to Open <<http://www.budapestopenaccessinitiative.org/boai-10-recommendations>> accessed 23 January 2013.

²⁰² See Bethesda Statement on Open Access Publishing <<http://www.earlham.edu/~peters/fos/bethesda.htm>> accessed 16 January 2013.

unrestricted distribution, interoperability, and long-term archiving (for the biomedical sciences, PubMed Central is such a repository).²⁰³

The major catalyst for open access at the European level was provided by the so-called Berlin Conferences.²⁰⁴ The first Berlin Conference was organised in 2003 by the Max Planck Society and the European Cultural Heritage Online (ECHO) project to discuss ways of providing access to research findings. Annual follow-up conferences have been organised ever since.²⁰⁵ The most significant result of the Berlin Conference was the *Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities* ('Berlin Declaration'), including the goal of disseminating knowledge through the open access paradigm via the Internet.²⁰⁶ The unique feature of the Berlin Declaration is the focus on the scientific requirements that the materials that should be disseminated through open access should meet. The experts gathering together in Berlin stated: '[w]e define open access as a comprehensive source of human knowledge and cultural heritage that has been *approved by the scientific community*.'²⁰⁷ The Berlin Declaration has been signed by hundreds of European and international institutions.

For the sake of simplicity, Suber has distilled the commonalities of these three statements into the 'BBB definition of Open Access' by noting that there is uniformity in the core concept of removing price and permission barriers.²⁰⁸ Although the definitions may differ in part, other recurring common principles encompass authors' consent on which open access must always depend and flexibility on removing barriers to commercial use or imposing a specific policy on derivative works.²⁰⁹ The 'three Bs' tend to maintain the 'definition of open access [. . .] an evolving and flexible concept with policy space to test new elements as they

²⁰³ Ibid.

²⁰⁴ See Open Access at the Max Planck Society, Berlin Conferences <<http://oa.mpg.de/lang/en-uk/berlin-prozess/berlin-konferenzen>> accessed 16 January 2013.

²⁰⁵ Ibid.

²⁰⁶ See 'Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities' (Berlin Conference, Berlin, 20-22 October 2003) <<http://oa.mpg.de/lang/en-uk/berlin-prozess/berliner-erklarung>> accessed 16 January 2013 (stating that 'in order to realize the vision of a global and accessible representation of knowledge, the future Web has to be sustainable, interactive, and transparent. Content and software tools must be openly accessible and compatible').

²⁰⁷ Ibid. See also Andres Guadamuz Gonzalez, 'The digital divide: it's the content, stupid: Part 2' (2005) 11(4) CTRLR 113, 118.

²⁰⁸ See Suber, Open Access (n 179) 7; Peter Suber, 'Praising Progress, Preserving Precision' (2004) 77 SPARC Open Access Newsletter <<http://legacy.earlham.edu/~peters/fos/newsletter/09-02-04.htm>> accessed 25 May 2013.

²⁰⁹ See Ress, 'Open-Access Publishing' (n 230) 480.

become necessary’ and, as Manon Ross has noted, ‘the challenge is to keep it simple and not confusing, yet complex enough to accommodate diversity’.²¹⁰

1.4.2 SPARC and Civil Society

Together with OAP declarations, the open access movement was boosted by countless initiatives of which the Scholarly Publications Access Resource Coalition (SPARC) is one of the most prominent.²¹¹ SPARC is an international alliance of academic and research libraries which promotes open access to scholarship with currently over 800 institutions in Australia, China, Europe, Japan and North America.²¹² It was launched in 1997 as a reaction to the ‘serial crisis’. In 2001, SPARC joined forces with European organisations to establish SPARC Europe.²¹³ SPARC was developed by the Association of Research Libraries to address ‘imbalances in the scholarly publishing system’, including supporting and promoting open access.²¹⁴ Basically, SPARC is a ‘catalyst for action’, which is aimed at reducing barriers to access, sharing and use of scholarship by promoting the understanding and implementation of OA policies and practices for scholarly research outputs, with a primary focus on journal literature, but with an evolving interest in OA in research outputs of all kinds.²¹⁵ As the SPARC website claims, its pragmatic focus is on educating stakeholders, advocating policy changes and incubating real-world demonstrations of business and publishing models that may ‘stimulate the emergence of new scholarly communication models that expand the dissemination of scholarly research and reduce financial pressures on libraries’.²¹⁶ The

²¹⁰ Ibid 481. See also, for a discussion of open access definitions, Peter Suber, Open access Overview <<http://legacy.earlham.edu/~peters/fos/overview.htm>> accessed 11 May 2013; Armstrong, ‘Crowdsourcing And Open Access’ (n 152) ft 8; Charles W Bailey, ‘What is Open Access?’ in Neil Jacobs (ed), *Open Access: Key Strategic, Technical, and Economic Aspects* (2006) 13, 15 <<http://www.digital-scholarship.com/cwb/WhatIsOA.pdf>> accessed 25 May 2013

²¹¹ There has been a multitude of OA initiatives worldwide in the last two or even three decades, ranging from institutional, governmental and civil society endeavours. Giving even a partial account of them is almost impossible. A good starting point for a picture of all these initiatives is Suber, *Timeline of the Open Access Movement* (n 197).

²¹² See Scholarly Publications Access Resource Coalition (SPARC) <<http://www.sparc.arl.org>> accessed 1 June 2013; Mia Liza A Lustriaa and Donald O Case, ‘The SPARC Initiative: A Survey of Participants and Features Analysis of Their Journals’ (2005) 31(3) *The Journal of Academic Publishing* 236, 236-246 <<http://dx.doi.org/10.1016/j.acalib.2005.01.004>> accessed 13 June 2013. See also, for an early history of SPARC, Mary M Case, ‘Igniting Change in Scholarly Communication: SPARC, Its Past, Present, and Future’ (2002) 26 *Advances in Librarianship* <http://www.sparc.arl.org/bm~doc/SPARC_advances-4.pdf> accessed 2 June 2013;

²¹³ See SPARC Europe <<http://sparceurope.org>> accessed 2 June 2013.

²¹⁴ See SPARC, About SPARC, <<http://www.sparc.arl.org/about/index.shtml>> accessed 2 June 2013.

²¹⁵ See SPARC, ‘2013 SPARC Program Plan’ (30 January 2013) 1 <<http://www.sparc.arl.org/bm~doc/sparc-2013-public-plan-final.pdf>> accessed 2 June 2013.

²¹⁶ Ibid.

coalition members of SPARC support the project through fees to cover the operating expenses and build a capital fund to finance its programmes.

However, additional coalitions are forming to join SPARC in its quest for OA and OAP. Merging together the interest of two different groups of OA publishers, commercial publishers and independent scientist/scholar publishers, the Open Access Scholarly Publishers Association (OASPA) was launched in 2008 'to support and represent the interests of Open Access (OA) journal and book publishers globally in all scientific, technical, and scholarly disciplines'.²¹⁷ OASPA promotes its goal by exchanging information related to OAP, setting OAP standards, supporting the development of OA business and publishing models, educating the community on the benefits and value of OAP and advocating for Gold OA.²¹⁸ OASPA may soon acquire a leading role in the OAP movement as it has been joined so far by the majority of the most relevant OAP players and advocates. Additionally, in a forward-looking move, OASPA has recently adapted its membership to include book publishers who, increasingly, are engaged with or investigating possibilities for OA book publishing.²¹⁹

1.4.3 OA Publication Models: Green, Gold, Gratis and Libre

The BBB definition that Suber has distilled is extremely inclusive in order to re-comprehend the entire variety of OAP types. In this regard, four major categories of OAP have been identified by the literature: green, gold, gratis and libre. The OA publication models mainly depend on the delivery mechanism of the articles and status of the traditional barriers to access. The distinction in the delivery mechanism of the OA research outputs has traditionally been connected with the chromatic qualifiers, gold and green, indicating whether the work is available OA via a journal (gold OA) or by way of a repository (green OA). The distinction between green and gold OAP was first theorised by Stevan Harnad and others a decade ago.²²⁰ The Open Access Scholarly Publishers Association (OASPA), has noted that '[g]old OA refers to implementing the free and open dissemination of original scholarship by publishers, as opposed to Green OA, in which free and open dissemination is

²¹⁷ OASPA, About OASPA, Mission and Purpose <<http://oaspa.org/about/mission-and-purpose>> accessed 13 June 2013.

²¹⁸ Ibid.

²¹⁹ Ibid.

²²⁰ See Stevan Harnad and others, 'The Access/Impact Problem and the Green and Gold Roads to Open Access' (2004) 30 *Serials Review* 310. See also Bo-Christer Björk, 'Anatomy of Green Open Access' (2013) *J of the Am Soc'y for Info Sci and Tech* <<http://www.openaccesspublishing.org/apc8/Personal%20VersionGreenOa.pdf>> accessed 1 July 2013; Stevan Harnad and others, 'The Access/Impact Problem and the Green and Gold Roads to Open Access: An Update' (2008) 34 *Serials Review* 36; Charles Oppenheim, 'Electronic Scholarly Publishing and Open Access' (2008) 34(4) *JIS* 577, 579-582; Andrew A Adams, 'Copyright and Research: an Archivangelist's Perspective' (2007) 4(1) *SCRIPT-ed* 285, 287; Jean-Claude Guéron, 'The "Green" and "Gold" Roads to Open Access: The Case for Mixing and Matching' (2004) 30 *Serials Rev* 315; David Goodman, 'The Criteria for Open Access' (2004) 30(4) *Serials Rev* 258, 259-260.

achieved by archiving and making freely available copies of scholarly publications that may or may not have been previously published.²²¹ Thus an article published in an open access journal is considered gold OA, whereas a pre-print article deposited within an institutional repository to be published in a conventional journal available only via subscription is an example of green OA.

It is worth mentioning that the Immediate Deposit/Optional Access (ID/OA) has also been proposed as a compromise model where publishers do not endorse green OA or require an embargo period before the research output can be published OA. In the ID/OA scenario the author would immediately deposit an article in a repository upon acceptance for publication, but set only the metadata on OA.²²² This model should be coupled with a semi-automated email print request button – which is enabled in repositories such as DSpace and EPrint²²³ – allowing any potential user to request a single copy of the deposited draft by email on an individual basis, which falls under fair use.²²⁴

The status of other barriers to access, such as price and permission for reuse, are indicated by the terms gratis and libre. The distinction has been made popular by Peter Suber, who borrowed the gratis/libre language from the world of software.²²⁵ In contrast to the gold/green distinction, which answers the question how the content is delivered, the gratis/libre distinction answers the question how open the content is.²²⁶ A gratis OA publication is free of price barriers as the publication is openly available, free of charge. The business models for achieving these results are various – including the most common system whereby publishers charge the author a fee to ‘free’ the work – and we will return to these in Section III of this study. A publication is considered libre if price barriers are removed and at least some permissions barriers are also relaxed. In the libre OA scenario, therefore, the content is also free of some copyright restrictions.

²²¹ See OASPA, About OASPA, Mission and Purpose <<http://oaspa.org/about/mission-and-purpose>> accessed 13 June 2013.

²²² See Stevan Harnad, ‘The Immediate-Deposit/Optional-Access (ID/OA) Mandate: Rationale and Model’ (*Open Access Archivangelism*, 13 March 2006) <<http://openaccess.eprints.org/index.php?archives/71-guid.html>> accessed 25 May 2013 (noting that a ID/OA policy ‘is greatly preferable to, and far more effective than a policy that allows delayed deposit (embargo) or opt-out as determined by publisher policy or copyright restrictions’). The ID/OA model has been also called ‘dual deposit/release strategy’. See Peter Suber, ‘Ten Lessons from the Funding Agency Open Access Policies’ (2006) 100 SPARC Open Access Newsletter <<http://legacy.earlham.edu/~peters/fos/newsletter/08-02-06.htm>> accessed 1 July 2013.

²²³ See Steve Hitchcock, Boost Repository Content with Eprints ‘Request eprint’ Button’ (Eprints, 7 April 2006) <http://www.eprints.org/news/features/request_button.php> accessed 1 July 2013.

²²⁴ See Harnad, ‘The Immediate-Deposit/Optional-Access (ID/OA) Mandate’ (n 222).

²²⁵ See Suber, Open Access (n 179) 65-75, 66.

²²⁶ Ibid 67.

According to some authors, a distinction within a broader OAP domain has also been made between models which completely meet the requirements stated by the OAP principles we have reviewed earlier, and especially the BBB definition of OAP, and many other models which do not totally fulfil the purpose intended in the OA declarations.²²⁷ Therefore, OA has been distinguished in true OA models and hybrid models. In this respect, true OA would include self-archiving in subject-based or institutional repositories, basically what we have referred to above as green OA, and OA journals, or gold OA. Hybrid models have been further distinguished, for example by Bernius and others, as optional OA, retrospective OA, delayed OA or partial OA, which refer respectively to OA granted upon authors' decision following the payment of a fee, to retro-digitised files such as older journals volumes, after an embargo period, or to some parts of the journals.²²⁸ However, additional distinctions and categorisations have been attempted and we will return to some of these when discussing OA business models more specifically in Section III of this study.

1.4.4 OA Publication Channels

Besides the establishment of the OAP movement's core principles in declarations and literature, the practical implementation of these principles has occurred through the emergence of OA publications, which have been delivered via traditional publication channels such as repositories, journals and, more recently, books.²²⁹

1.4.4.1 OA Repositories

Electronic repositories give authors the opportunity to archive digital 'e-prints'. The scholarly works archived by authors – an action which is usually referred to as 'self-archiving' – may be either working papers that have not yet been published, also called 'preprints', or articles already published by a journal, known as 'postprints'. There are two main categories of repositories: disciplinary or subject-specific repositories and institutional repositories. **Subject-specific Repositories**, or open online databases, where authors may deposit pre-publication versions of their articles, together with supporting data and other materials, have been perhaps the first practical expression of the emergence of an open access publishing movement. In particular, the ArXiv database in high energy physics and related fields – which was established in 1991 – may be regarded as the pioneering initiative among

²²⁷ See Steffen Bernius and others, 'Open Access Models and their Implications for the Players on the Scientific Publishing Market', (2009) 39(1) *Economic Analysis & Policy* 103, 105-108. See John Willinsky, *The Access Principle* (n 3) 211-216 ('group[ing] the current variations' of open access publishing 'into ten flavors or models, based largely on how they are financed and the nature of the access that they provide').

²²⁸ *Ibid* 105.

²²⁹ Bo-Christer Björk 'Open Access to Scientific Publications - An Analysis of the Barriers to Change' (2004) 9(2) *Information Research* 1 <<http://informationr.net/ir/9-2/paper170.html>> accessed 16 March 2013.

open online databases.²³⁰ Subject-specific or subject-based repositories bundle together research outputs of specific scientific disciplines regardless of the institutional affiliation of the researchers.²³¹ The **Institutional Repository** (IR) or the OA archive has been seen as the most cost-effective route to providing maximal access to publicly funded research.²³² IRs bundle together the research output of an institution, such as a university or research centre, in order to make it available to the public.²³³ IRs have emerged later than subject-based repositories. Since the first IRs were developed around ten years ago – such as Eprints at Southampton,²³⁴ D-Space at MIT,²³⁵ the Digital Academic Repositories (DARE) programme in the Netherlands,²³⁶ later integrated into the National Academic Research and Collaborations Information System (NARCIS),²³⁷ and the Focus on Access to Institutional Resources (FAIR) run by JISC in the United Kingdom²³⁸ – their number has grown very rapidly.

The OpenDOAR is perhaps the most authoritative directory of academic open access repositories²³⁹ and one of the SHERPA services including RoMEO and JULIET, run by the

²³⁰ See ArXiv <<http://arxiv.org>> accessed 16 May 2013.

²³¹ See Bo-Christer Björk, 'Open Access Subject Repositories – an Overview' (2013) J of the Am Soc'y for Info Sci and Tech <http://www.openaccesspublishing.org/repositories/Subject_Repositories.pdf> accessed 13 June 2013; Bernius and others, 'Open Access Models and their Implications for the Players on the Scientific Publishing Market' (n 227) 107-108.

²³² See Leslie Chan, 'Supporting and Enhancing Scholarship in the Digital Age: The Role of Open-Access Institutional Repositories' (2004) 29 Canadian J of Comm 277 <<http://cjc-online.ca/index.php/journal/article/view/1455/1579>> accessed 27 January 2013 (looking at the implementation of the IR at the University of Toronto).

²³³ See Bernius and others, 'Open Access Models and their Implications for the Players on the Scientific Publishing Market' (n 227) 107-108; Carol A. Parker, 'Institutional Repositories and the Principle of Open Access: Changing the Way We Think About Legal Scholarship' (2007) 37 New Mexico L. Rev. 1 (explaining how institutional repositories work, examining options for law schools wishing to establish an institutional repository, describing the increasing number of law school institutional repositories and exploring how legal scholars are using repositories creatively to publish digital work); Pamela Bluh, "'Open Access,' Legal Publishing, and Online Repositories' (2006) 34 J L Med & Ethics 126; Richard Jones, Theo Andrew and John MacColl, *The Institutional Repository* (Chandos Publ 2006); Raym Crow, 'The Case for Institutional Repositories: A SPARC Position Paper' (SPARC 2000)

²³⁴ See Eprints <http://www.eprints.org> accessed 13 June 2013.

²³⁵ See DSpace <<http://www.dspace.org>> accessed 13 June 2013.

²³⁶ See Lilian van der Vaart, 'DARE: A New Age in Academic Information Provision in the Netherlands' (SURF 2003) <http://www.surf.nl/SFDocuments/Paper_EUNIS_2003.pdf> accessed 1 July 2013.

²³⁷ See NARCIS <www.narcis.nl> accessed 1 July 2013.

²³⁸ See Chris Awre, 'The JISC FAIR Programme: Opening up Access to Institutional Assets' (2004) 21(3) ASSIGNation <<http://eprints.rclis.org/4959>> accessed 1 July 2013.

²³⁹ See OpenDOAR – Directory of Open Access Repositories <<http://www.opendoar.org>> accessed 13 June 2013. See also Kathleen B Oliver and Robert Swain 'Directories of Institutional Repositories: Research Results & Recommendations' (World Library and Information Congress: 72nd IFLA general Conference and Council, Seoul,

Centre for Research Communications, which is hosted by the University of Nottingham and currently funded by the Joint Information Systems Committee (JISC).²⁴⁰ OpenDOAR has over 2,300 listings included in its database and, through its statistical charts, shows a steady increase from the 866 repositories listed at the end of 2006, to 1,100 in 2007, 1,300 in 2008, 1,600 in 2009, 1,900 in 2010, 2,200 in 2011 and 2,300 in 2012.²⁴¹ By far the majority of these repositories are in the English language.²⁴² Almost 50 per cent of the repositories are located in Europe, 20 per cent in North America, 17 per cent in Asia, 8 per cent in South America, 3 per cent in Africa and 2.5 per cent in Australasia.²⁴³ The United States is by far the country hosting most repositories with 17 per cent, followed by the United Kingdom with 9 per cent, Germany with 7 per cent and Japan with 6 per cent.²⁴⁴ With the inclusion of India, Poland and Italy, seven countries host more than 50 per cent of the worldwide OA repositories.

The large majority of repositories (83 per cent) fall into the institutional category, being an institutional or departmental repository; disciplinary repositories or cross-institutional subject repositories account for 10.6 per cent; archives aggregating data from several subsidiary repositories amount to 4.1 per cent, and repositories for governmental data to 2.5 per cent.²⁴⁵ Most of these repositories are multidisciplinary, generally being institutional repositories, whereas the majority of the disciplinary repositories can be found in Health and Medicine, followed by History and Archeology, Business and Economics, Law and Politics and General Science.²⁴⁶ As for the content type included in OA repositories, this is quite miscellaneously distributed. Journal articles have been found in the majority of repositories (1,570), followed by theses and dissertations (found in 1,237 repositories), unpublished reports and working paper (831), book chapters and sections (822), conference and

Korea, 20-24 August 2006) <http://archive.ifla.org/IV/ifla72/papers/151-Oliver_Swain-en.pdf> accessed 13 June 2013 (describing and comparing the scope, structure and update methodology of OpenDOAR and 23 other directories of institutional repositories).

²⁴⁰ Ibid. See also JISC <<http://www.jisc.ac.uk>> accessed 14 June 2013.

²⁴¹ See Growth of the OpenDOAR Database – Worldwide <<http://www.opendoar.org/find.php?format=charts>> accessed 13 June 2013 (noting that this database shrank slightly at the beginning of 2012 as a result of a quality control exercise revealing non-functioning repositories).

²⁴² See Most Frequent Languages in OpenDOAR - Worldwide <<http://www.opendoar.org/find.php?format=charts>> accessed 13 June 2013.

²⁴³ See Proportion of Repositories by Continent – Worldwide <<http://www.opendoar.org/find.php?format=charts>> accessed 13 June 2013.

²⁴⁴ See Proportion of Repositories by Country – Worldwide <<http://www.opendoar.org/find.php?format=charts>> accessed 13 June 2013.

²⁴⁵ See Open Access Repository Types – Worldwide <<http://www.opendoar.org/find.php?format=charts>> accessed 13 June 2013.

²⁴⁶ See Subjects in OpenDOAR – Worldwide <<http://www.opendoar.org/find.php?format=charts>> accessed 13 June 2013.

workshop papers (812), multimedia (544), bibliographic references (422), learning objects (356), datasets (86), patents (66) and software (35).²⁴⁷

The interplay between OAP and open source software emerged at an early stage in self-archiving. In 2000, Eprints released by the University of Southampton was made freely available in order to provide libraries and other institutions with the tools to set up similar archives.²⁴⁸ Around the turn of the century, several special open source systems were developed specifically for managing eprint archives, such as ePrints, DSpace or Fedora/Fez.²⁴⁹ Reporting on the usage of OA repository software, OpenDOAR listed, out of a total of 2,359 repositories, 41.2 per cent using DSpace, 14.8 per cent using Eprints, 4.2 per cent using Digital Commons and 2.9 per cent using OPUS, whereas the remaining repositories are listed as running unknown software or other types of software.²⁵⁰ Looking at the infrastructural characteristics of subject-specific and institutional repositories, it is worth noting that only a small percentage of subject repositories have their own IT infrastructure, whereas the large majority of small and medium-sized repositories are run on top of OA repository software, such as Eprints, D-Space and Opus.²⁵¹ In contrast, IRs fall naturally into a university's organisation, often a library, and almost all the IRs have been created using OA solutions.²⁵²

The Open Archives Initiative (OAI) has addressed the problem of consistent classification of the contents of individual databases of preprints and other materials. OAI has laid down standards for the metadata that should be associated with the item and outlined a Protocol for Metadata Harvesting (OAI-PMH) which enables the metadata from different archives to be gathered together into a single searchable whole.²⁵³ If the repository complies with the

²⁴⁷ See Content Types in OpenDOAR Repositories – Worldwide <<http://www.opendoar.org/find.php?format=charts>> accessed 13 June 2013.

²⁴⁸ See also R Tansley and S Harnad (2000) 'Eprints.org Software for Creating Institutional and Individual Open Archives' (2000) 6(10) D-Lib ><http://www.dlib.org/dlib/october00/10inbrief.html#HARNAD>> accessed 1 July 2013.

²⁴⁹ See Willinsky, 'The Stratified Economics of Open Access' (n 576) 58.

²⁵⁰ See Usage of Open Access Repository Software – Worldwide <<http://www.opendoar.org/find.php?format=charts>> accessed 13 June 2013.

²⁵¹ See Björk, 'Open Access' (n 484) 8.

²⁵² See Björk, 'Open Access' (n 484) 8. See also Sheau-Hwang Chang, 'Institutional Repositories: the Library's New Role, (2003) 19(3) OCLC Systems and Services 77.

²⁵³ See Open Archives Initiative www.openarchives.org accessed 18 May 2013. See also Ranjeet Devarakonda and others, 'Data sharing and retrieval uses OAI-PMH' (2010) 4 (1) Earth Science Informatics 1, 1–5; Frank McCown and others, 'Search Engine Coverage of the OAI-PMH Corpus' (2006) 10(2) IEEE Internet Computing 66, 66–73 <<http://library.lanl.gov/cgi-bin/getfile?LA-UR-05-9158.pdf>> accessed 10 June 2013; Goodman, 'The Criteria for Open Access' (n 220) 261; Herbert Van de Sompel, Jeffrey A Young and Thomas B Hickey 'Using the OAI-PMH ... Differently' (2003) 9 (7/8) D-Lib Magazine <<http://www.dlib.org/dlib/july03/young/07young.html>> accessed 10 June 2013; Carl Lagoze and Herbert Van de Sompel, 'The Open Archives Initiative: Building a Low-

OAI-PMH, users can utilise federated searching across all repositories. In addition, all major institutional repositories are now indexed by Google Scholar, although a low indexing ratio has been shown for many IRs in Google Scholar.²⁵⁴

1.4.4.2 Open Access Journals

In order to promote and map the diffusion of OA journals, the Lund University Libraries started the Directory of Open Access Journals (DOAJ) in February 2003.²⁵⁵ Aiming at comprehensive coverage, the DOAJ is intended to expand the 'visibility and ease of use of open access scientific and scholarly journals thereby promoting their increased usage and impact.'²⁵⁶ This ten-year project builds upon the BOAI definition of OA and defines OA 'as journals that use a funding model that does not charge readers or their institutions for access.'²⁵⁷ DOAJ sets additional requirements for listing OA journals in its directory, such as quality control, including peer review, and regular publication of research articles in consecutively numbered and dated issues.²⁵⁸

Since the inception of the open-access initiative in 2001, there are now almost 10,000 open access journals and their number is constantly on the rise.²⁵⁹ Laakso and others have studied the development of open access journal publishing in the first decade of this

Barrier Interoperability Framework' in Edward A Fox and Christine L Borgman (eds), *Proceedings of the first ACM/IEEE-CS Joint Conference on Digital Libraries* (ACM 2001) 54–62 <<http://www.openarchives.org/documents/jcdl2001-oai.pdf>> accessed 10 June 2013.

²⁵⁴ See Kenning Arlitsch and Patrick S O'Brien, 'Invisible institutional repositories: Addressing the low indexing ratios of IRs in Google Scholar' (2012) 30(1) *Lib Hi Tech* 60, 60–81. See also Plotin, 'Legal Scholarship, Electronic Publishing, and Open Access' (n 350) 50–51.

²⁵⁵ See DOAJ, Directory of Open Access Journals <<http://www.doaj.org>> accessed 16 January 2013. See also Anna-Lena Johansson and Ingela Wahlgren, 'The One Stop Shop to Open Access Journals – DOAJ' (2008) 4 *Sciecom Info* <<http://lup.lub.lu.se/luur/download?func=downloadFile&recordId=1361281&fileId=1361286>> accessed 13 June 2013.

²⁵⁶ See DOAJ, About DOAJ, Definitions <<http://www.doaj.org/doaj?func=loadTemplate&template=about&uiLanguage=en>> 1 June 2013.

²⁵⁷ *Ibid.*

²⁵⁸ For studies discussing and questioning whether all the journals listed meet the OA requirements, see Hajar Sotudeh and Abbas Horri, 'Tracking Open Access Journals Evolution: Some considerations in Open Access Data Collection Validation' (2007) 58(11) *J of the American Soc'y for Info Sci and Tech* 1578 (noting that only half of the collection meets the requirement of a free, immediate, full and constant access policy for at least 5 years); Sally Morris 'Personal View: When is a journal not a journal - a closer look at the DOAJ' (2006) 19 *Learned Publishing* <<http://docserver.ingentaconnect.com/deliver/connect/alpsp/09531513/v19n1/s7.pdf?expires=1370838167&id=74508955&titleid=885&acname=Guest+User&checksum=161A11C769B795858550585DF3EEE6B>> accessed 1 June 2013 (discussing whether the journals listed in the DOAJ are really open access or journals at all).

²⁵⁹ See DOAJ (n 255).

century.²⁶⁰ The results show a very rapid growth of OA publishing. From 2000 to 2010 the annual growth rate has been 18 per cent for the number of journals and 30 per cent for the number of articles. Still, Laakso and others note that these figures are remarkable if contrasted with the reported 3.5 per cent volume increase in journal publishing in general. Additional OA models, such as articles made OA by publishers with a delay and individual author-paid OA in subscription journals, have grown exponentially in the last decade, together with the presence of commercial publishers on the OA scene.²⁶¹ In particular, commercial publishers, who have been little involved in the early years of OA publishing, have shown the most dramatic development since 2005, becoming the most common publishers of OA articles and jumping from 13,400 articles in 2005 to 119,900 in 2011.²⁶² Laakso and Björk have quantified 49 per cent of all OA articles as being from journals requiring article-processing fees.²⁶³ Additionally, approximately 17 per cent of the 1.66 million articles published during 2011 and indexed in Scopus²⁶⁴ – the most comprehensive article-level index of scholarly articles – are available OA through journal publishers: 11 per cent of them in full immediate open access, 0.7 per cent as author-paid OA in subscription journals, and the remainder in journals that have a maximum OA delay of twelve months.²⁶⁵ Major increases in the rate of OA journals from 2005 to 2011 have been registered respectively in Asia, Europe and United States. Latin America shows an early adoption of OA journals with numbers superior to North America and Asia in 2000 and 2005, but the region has not increased its output at a similar rate to Asia, Europe and North America, who have multiplied their outputs between 2005 and 2011.²⁶⁶

²⁶⁰ Mikael Laakso and others, *The Development of Open Access Journal Publishing from 1993 to 2009*, (2011) 6(6) PLoS ONE <<http://www.plosone.org/article/info:doi/10.1371/journal.pone.0020961>> accessed 28 May 2013. See also, for other studies tracing the growth and development of open access journals, Brian D Edgar and John Willinsky, *A Survey of Scholarly Journals Using Open Journal Systems* (2010) (1(2) Scholarly and Research Communication <<http://journals.sfu.ca/src/index.php/src/article/view/24/41>> accessed 1 June 2013; Howard Falk, 'Open Access Gains Momentum' (2004) 22(6) *The Electronic Library* 527; Sumeer Gul and others, 'Open Access Journals: A Global Perspective' (2008) 4(1) *Trends in Information Management* 1; Ware; Johanne Provençal, 'Scholarly Journal Publishing in Canada: Annual Industry Report 2010-2011' (Canadian Association of Learned Journals 2011) 14 <http://www.calj-acrs.ca/docs/CALJ_%20IndustryReport_2011.pdf> accessed 1 June 2013.

²⁶¹ See Mikael Laakso and Bo-Christer Björk, 'Anatomy of Open Access Publishing: a Study of Longitudinal Development and Internal Structure' (2012) (10(1) *BMC Med* 124.

²⁶² See Laakso and Björk, 'Anatomy of Open Access Publishing' (n 261) 130-131.

²⁶³ *Ibid* 128.

²⁶⁴ See SciVerse Scopus <<http://www.scopus.com/home.url>> accessed 1 June 2013 (which is very unfortunately not an OA database).

²⁶⁵ See Laakso and Björk, 'Anatomy of Open Access Publishing' (n 261) 129.

²⁶⁶ *Ibid* 129-130.

From an IT infrastructure perspective, most journals use either proprietary systems or open software systems. As in the case of repositories, several special open source systems were developed in the last decade or so specifically for publishing journals,²⁶⁷ such as DpubS,²⁶⁸ Hyperjournal, or the Open Journal Systems. The last of these is the most widely used open source software for the management and publishing of journals and was developed as part of the Public Knowledge Project at Stanford under the direction of John Willinsky.²⁶⁹ Also, collaborative or third party platforms, such as Scielo,²⁷⁰ J-Stage²⁷¹ and Highwire press have been used for the publication of accepted papers by a large number of established journals. For example, Stanford's Highwire Press – a library initiative providing electronic publishing support to a large number of publishers including scholarly societies and non-profit publishers – has created the largest archive of free full-text science worldwide, assisting in the online publication of almost 2.4 million delayed OA (usually 12 months) articles out of a total of more than 7.1 million articles published through its e-platform.²⁷²

1.4.4.3 Open Access Books

Although at an early stage, open access publishing is being promoted also in the domain of books and monographs. The Open Access Publishing in European Networks (OAPEN) is the leading initiative in this context and aims at working with publishers to build a quality controlled collection of OA books.²⁷³ OAPEN has several national counterparts, including OAPEN UK. Interest in OAP of academic books seems to be definitely on the rise, especially in the humanities and social sciences sector, which is the sector most concerned with the future of academic monographs. This may also be reflected by a large conference recently organised by JISC and OAPEN and hosted by the British Library, which gathered together

²⁶⁷ See Willinsky, 'The Stratified Economics of Open Access' (n 576) 58.

²⁶⁸ See DPubs Digital Publishing System <<http://dpubs.org>> accessed 13 July 2013.

²⁶⁹ See PKP, Public Knowledge Project, Open Journal System <<http://pkp.sfu.ca/?q=ojs>> accessed 13 July 2013.

²⁷⁰ See Scientific Electronic Library Online <<http://www.scielo.org/php/index.php?lang=en>> accessed 13 July 2013.

²⁷¹ See Japan Science and Technology Information Aggregator, Electronic <<https://www.jstage.jst.go.jp/browse>> accessed 13 July 2013.

²⁷² See HighWire Stanford University, Free Online Full-text Articles <<http://highwire.stanford.edu/lists/freeart.dtl>> accessed 3 July 2013. See also Willinsky, 'The Stratified Economics of Open Access' (n 576) 66 (citing also other library initiatives that provide publishing support, in conjunction with university presses, including Project Muse at Johns Hopkins Library, <http://muse.jhu.edu>, and Project Euclid at Cornell University Library, <http://projecteuclid.org>).

²⁷³ See OAPEN, Open Access Publishing in European Networks <<http://www.oapen.org>> accessed 2 June 2013. See also Eelco Ferwerda, New Models for Monographs – Open Books (2010) 23(2) *Serials: The Journal for the Serials Community* 91, 91-96.

hundreds of international attendees.²⁷⁴ Several OA books business models, as we will investigate in detail in Part III of this study, have been trialled to date by individual publishers, such as OpenBook Publishers,²⁷⁵ or consortia projects, such as Knowledge Unlatched.²⁷⁶

1.4.5 Open Access Publishing in the STEM Subjects

The ratio of OAP varies considerably according to the academic field. Scholars in the physical and biological sciences have led the way in showing the viability of Internet based, open access scholarly publishing. As mentioned earlier, the ArXiv e-print platform was launched in 1991 by physicists at Cornell University and has become one of the most successful OA digital archives in the sciences. As Matthew White has noted, the pioneering success of the ArXiv initiative has the merit of having outlined first the inadequacy of journals in communicating, by placing an emphasis on the article as opposed to the journal and questioning the validity of the relationship between the journal and the evaluation process.²⁷⁷ Initially established by Paul Ginsparg as a server which provided colleagues in the physics community with a platform on which to store and access research papers, ArXiv has turned into a worldwide community-sustained, moderated scholarly communication forum, whose content is free and OA to individual users and can be deposited by the individual researchers in the archive for free.²⁷⁸ To date ArXiv offers open access to approximately 850,000 e-prints in Physics, Mathematics, Computer Science, Quantitative Biology, Quantitative Finance and Statistics, with around 50 million downloads from all over the world.²⁷⁹

Today, the sciences are still the largest feeders of the open access movement in scholarly publishing. OA publication volume has grown within all major scientific disciplines; however, biomedicine has seen a particularly rapid 16-fold growth from 7,400 articles in 2000 to

²⁷⁴ See Open Access Monographs in the Humanities and Social Sciences Conference, The British Library, London, 1-2 July 2013 <<https://www.jisc-collections.ac.uk/JISC-Collections-events/oabooksconf>> accessed 15 July 2013 (including all the presentations and videos from the event, alongside a conference 'storify' and links to blogs about the conference).

²⁷⁵ See OpenBook Publishers, Knowledge is for Sharing <<http://www.openbookpublishers.com>> accessed 2 June 2013.

²⁷⁶ Frances Pinter, 'Knowledge Unlatched: An Argument for Academic Scholarship in Law to be Open and How it Might be Achieved' (2012) 12(3) LIM 185

²⁷⁷ See White, 'What is the Future Role of the Publisher?' (n 19).

²⁷⁸ See Cornell University Library arXiv Operating Principles (28 March 2012) <<https://confluence.cornell.edu/download/attachments/127116484/arXivPrinciplesMarch12.pdf>> accessed 2 June 2013. See also Chris Armbruster, 'Open Access in Social and Cultural Science: Innovative Moves to Enhance Access, Inclusion and Impact in Scholarly Communication' (2008) 6 Pol'y Futures In Educ 424, 433 <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=849305> accessed 15 May 2013.

²⁷⁹ See ArXiv (n 230).

120,900 articles in 2011.²⁸⁰ The sciences seem to show a trend towards the increasing emergence of new OA journals.²⁸¹ In the biomedical field, this has become a well-marked path with the majority of OA articles provided through journal websites, either in OA journals or as OA articles in the context of a traditional subscription model, whereas in other scientific fields there is a higher rate of OA articles available from authors' websites or institutional repositories.²⁸² Commercial publishers, such as John Wiley & Sons, Sage Publications and Nature Publishing Group, have launched a growing number of OA publications. Highly ranked medical journals, such as *The New England Journal of Medicine*, make each issue free to readers six months after publication.²⁸³ The Royal Society, the UK's national academy of science and the publisher among others of the first modern academic journal *Philosophical Transactions*, offers OAP options based on authors-pay models, fully open access journals, such as *Open Biology*, and an OA membership programme to enable institutions to encourage OAP through a 25 per cent saving on all article processing charges.²⁸⁴ Again, the OA journals published by major OA publishers can be counted in the thousands. BioMed Central and Public Library of Science (PLOS), for instance, are quintessential examples, offering complete and immediate OA to their journals, mostly financed by authors' fees. PLoS – which publishes the best known scientific OA journal – began with 136 articles in 2006 and now publishes more than 15,000 articles.²⁸⁵ In 2010, a milestone moment for PLoS took place with the coverage of all the operating cost with revenue for the first time, 'adding to the growing body of evidence that high-quality open

²⁸⁰ See Laakso and Björk, 'Anatomy of Open Access Publishing' (n 261) 131. See also Bo-Christer Björk and others, 'Open Access to the Scientific Journal Literature: Situation 2009' (2010) 5(6) PLoS <http://www.plosone.org/article/info:doi/10.1371/journal.pone.0011273> accessed 2 June 2013 (finding that 8.5 per cent of articles published in 2008 were freely available at the publishers' website and an additional 11.9 per cent free manuscripts could be found using search engines, making the overall OA percentage 20.4 per cent, with chemistry having the lowest share (13 per cent), earth science the highest (33 per cent)); Mamiko Matsubayashi and others, 'Status of open access in the biomedical field in 2005' (2009) 97(1) J Med Libr Assoc 4.

²⁸¹ See Rod J Rohrich and Daniel Sullivan, 'Trends in Medical Publishing: Where the Publishing Industry Is Going' (2013) 131(1) Plastic and Reconstructive Surgery 179; Paul K Guinnessy, 'Europe Moves Closer to Open-Access Publishing' (2012) 65(11) Physics Today 22, 23 (reporting interviews with publishers increasingly willing to offer new OA journals and noting that offering OA-specific journals may be more attractive for authors than gold hybrid OA options).

²⁸² See Björk and others, 'Open Access to the Scientific Journal Literature' (n 280) (noting that in medicine, biochemistry and chemistry publishing in OA journals was more common, while in other fields author-posted articles are dominant); Matsubayashi and others, 'Status of open access in the biomedical field in 2005' (n 280) (confirming that in the biomedical field more than 70 per cent of the OA articles were provided through journal websites and the rate of self-published articles in personal websites or repositories was quite low).

²⁸³ See New England Journal of Medicine, About NEJM, Past and Present, NEJM Today <<http://www.nejm.org/page/about-nejm/history-and-mission>> accessed 10 June 2013.

²⁸⁴ See Royal Society Publishing, Open Access Publishing <http://royalsocietypublishing.org/site/authors/open_access.xhtml> accessed 13 June 2013. See also Royal Society, *Science as Open Enterprise* (n 161).

²⁸⁵ See Public Library of Science <<http://www.plos.org>> accessed 13 June 2013.

access publishing is sustainable.²⁸⁶ Similarly, BioMed Central – owned by Springer Science+Business Media – is a Science, Technology, Engineering and Medicine (STEM) publisher of 255 peer-reviewed OA journals spanning all areas of biology, biomedicine and medicine.²⁸⁷ Other well-known OA journal publishers of STEM literature include Hindawi Publishing Corporation,²⁸⁸ Dove Press²⁸⁹ and Medknow.²⁹⁰ As an additional example, Willinsky and others report the successful story of the OA journal *Open Medicine*.²⁹¹ In the biomedical sector, OA journals now form an important source of peer-reviewed data for medicine, span the gamut of medical literature and are highly trusted, highly referenced, indexed and well received.²⁹² As evidence of the acquired reputation of OA journals in the biomedical field, major data aggregators – including PubMed, Index Medicus, PubMed Central and OVID – have open access databases and search platforms dedicated to open access material.²⁹³

The leading role of the scientific field in OAP can also be seen with regard to OA mandate policies. Funders of scientific and biomedical research, such as the Wellcome Trust in the UK and the NIH in the US, have first instituted OA mandate policies, which – as will be discussed in more detail in the last part of this review – are under consideration by a number of other

²⁸⁶ Peter Jerram, 2010 PLoS Progress Update (*PLoS Blogs*, 20 July 2011) <<http://blogs.plos.org/plos/2011/07/2010-plos-progress-update>> accessed 10 June 2013. See Also PLoS, '2010 Progress Update' (PLoS 20 July 2011) <http://www.plos.org/media/downloads/2011/2010_PLoS_Progress_Update_lo.pdf> accessed 10 June 2013.

²⁸⁷ See BioMed Central The Open Access Publisher, About us <<http://www.biomedcentral.com/about>> accessed 10 June 2013.

²⁸⁸ See Hindawi Publishing Corporation <<http://www.hindawi.com>> accessed 10 June 2013. See also Paul Peters, 'Going All the Way: How Hindawi Became an Open Access Publisher' (2007) 20(3) *Learned Publishing* 191.

²⁸⁹ See Dove Press – Open Access to Scientific and Medical Research <<http://www.dovepress.com>> accessed 10 June 2013. See also Richard Poynder, 'The Open Access Interviews: Dove Medical Press (*Open and Shut?*, 5 November 2008) <<http://poynder.blogspot.it/2008/11/open-access-interviews-dove-medical.html>> accessed 10 June 2013.

²⁹⁰ See Wolters Kluwer Health, Medknow <<http://www.medknow.com>> accessed 10 June 2013 (recently acquired by Kluwer Health, proving an increasing interest of academic traditional commercial publishers in OAP).

²⁹¹ See John Willinsky and others, *Doing Medical Journals Differently: Open Medicine, Open Access, and Academic Freedom* (2007) 32(3) *Canadian Journal of Communication* 595, 595-612 <<http://www.cjc-online.ca/index.php/journal/article/view/1952/1986>> accessed 1 June 2013. See also Claire Kendall and others, *Open Medicine at Five Years* (2012) 6(2) *Open Medicine* <<http://www.openmedicine.ca/article/view/533/460>> accessed 1 June 2013.

²⁹² Rohrich and Sullivan, 'Trends in Medical Publishing' (n 281) 181.

²⁹³ See National Center for Biotechnology Information (NCBI), PubMed <<http://www.ncbi.nlm.nih.gov/pubmed>> accessed 2 June 2013; Index Medicus – Abbreviations of Journal Titles, <<http://www2.bg.am.poznan.pl/czasopisma/medicus.php?lang=eng>> accessed 2 June 2013; U.S. National Institutes of Health's

funding bodies worldwide. In order to enhance the public value of grant-funded research, the UK Wellcome Trust and the US National Institute of Health (NIH) request that all grant recipients deposit copies of their published work in the open access PubMed Central six months after publication.²⁹⁴

Besides the ‘serial crisis’ and library budget constraints – which have been more critical in scientific, and especially biomedical, publishing than in any other academic publishing sector²⁹⁵ – the literature has highlighted additional specific values of OA in the STEM subjects. In recent times, as a report of the Working Party of the Sponsoring Consortium for Open Access Publishing in Particle Physics (SCOAP³) has mentioned, the increasing awareness that results of publicly funded research should be made generally available has been amplified in science by the transformation of research activities towards ‘e-Science, carried out by a global scientific community linked by strong networks’.²⁹⁶ Again, with special reference to biomedical research Yamey and Willinsky have stressed the public health value of access to literature to be construed as a global public good and human right.²⁹⁷ Still, Willinsky reinforced the democratic value of OA in medical research by mentioning among the critical motivations leading to the launch of the *Open Medicine* journal that of furthering scholarly innovation, intellectual integrity and academic freedom, that can be too readily violated by ‘current models in biomedical publishing, operating at the intersection of revenue-driven and professional interests’ and depending on medical

National Library of Medicine, PubMed Central, <<http://www.ncbi.nlm.nih.gov/pmc>> accessed 2 June 2013; Wolters Kluwer Health, Ovid <<http://www.ovid.com>> accessed 2 June 2013.

²⁹⁴ See Wellcome Trust, Open Access Policy, Position Statement in Support of Open and Unrestricted Access to Published Research <<http://www.wellcome.ac.uk/About-us/Policy/Spotlight-issues/Open-access/Policy/index.htm>> accessed 2 June 2013; ‘Open Access Publishing – Guidance for Wellcome Trust Centres and Major Overseas Programmes (Wellcome Trust May 2013) <http://www.wellcome.ac.uk/stellent/groups/corporate_site/@policy_communications/documents/web_document/wtvm053368.pdf> accessed 2 June 2013; and National Institutes of Health, Revised Policy on Enhancing Public Access to Archived Publications Resulting from NIH-Funded Research <<http://grants.nih.gov/grants/guide/notice-files/NOT-OD-08-033.html>> accessed 27 May 2013.

²⁹⁵ See Smith, ‘The Highly Profitable but Unethical Business of Publishing Medical Research’ (n 193) 452-453 (noting that Reed-Elsevier, the world’s largest publisher of academic research, made an adjusted operating profit of £1,142 million on a turnover of £5,166 million, of which 39 per cent was contributed by the scientific part of the company, although that part accounts for only 28 per cent of the business and again noting that an average individual million pound journal might well have a gross margin of £600,000 and a profit of £350,000; also, Smith reports that the Brain Research journal famously cost \$23,617 a year for 2006 and that ‘the publishers have for around 20 years been following a business model that I call “less for more”, putting up prices ‘by substantially more than the rate of inflation to compensate for the cancelled [library] subscriptions’).

²⁹⁶ SCOAP³ Working Party, *Towards Open Access Publishing in High Energy Physics: Report of the SCOAP³ Working Party* (CERN 19 April 2007) 4-6 <<http://scoap3.org/files/Scoap3WPReport.pdf>> accessed 2 June 2013.

²⁹⁷ See Yamey, ‘Excluding the Poor from Accessing Biomedical Literature’ (n 185) 21 and Willinsky, *The Access Principle* (n 3) 143-154

advertising and professional-association support.²⁹⁸ Finally, Smith raises the critical point that making money through restricting access to research may be ‘ethically very questionable for academic societies’.²⁹⁹ Addressing the example of the British Society of Lumpology and its journal, the *British Journal of Lumpology*, Smith considers restriction of access to research to be in clear conflict with the mission of the society, which is ‘to raise standards in and promote lumpology and reduce the mortality and morbidity that results from lumps’.³⁰⁰ Equally, the same consideration may be applied to any other academic society having similar goals in its mission statements.

1.4.6 Open Access Publishing in the Social Sciences and Humanities

Social Sciences, Arts and Humanities come in second place in terms of volume of OA article outputs, with 56,000 articles published in 2011.³⁰¹ According to Chris Armbruster, there is a correspondence of the innovative OA logic in academic publishing across natural and social sciences even though solutions vary.³⁰² Although prices of journals in social sciences and humanities have not witnessed as rapid a price increase as in STEM, the academic community has felt that the logic of OAP applies equally to the social sciences and humanities, as ‘the elaboration, refutation and creation of knowledge claims is increasingly restricted and distorted’.³⁰³ From ArXiv to the Social Science Research Network, social sciences and humanities have followed in the footsteps of the natural sciences, promoting a global cross-disciplinary OAP movement. Yet, in the social sciences and humanities more publishers and editors are needed. This is a goal that is within reach provided that scholars are reassured that OAP may deliver superior literature awareness tools, and costs are reduced and defrayed among scholarly institutions, funding agencies, authors and agencies, especially in the social sciences where charging costs to the authors may be problematic because of the paucity of research grants; authors frequently are not members of academic institutions and single-authored papers are still the standard.³⁰⁴

1.4.6.1 SSRN, RePEc, BEPress and JSTOR

²⁹⁸ Actually, the launch of Open Medicine was related to the growing tension between the editors of the Canadian Medical Association Journal and its publishers, CMA Holdings, which is the business arm of the Canadian Medical Association. See Willinsky and others, ‘Doing Medical Journals Differently’ (n 291) 597, 598-601. In the article, Willinsky and others also offer a brief history of editorial interference in medical journal publishing. Ibid 601-602.

²⁹⁹ Smith, ‘The Highly Profitable but Unethical Business of Publishing Medical Research’ (n 193) 454.

³⁰⁰ Ibid.

³⁰¹ See Laakso and Björk, ‘Anatomy of Open Access Publishing’ (n 261) 131.

³⁰² See Armbruster, ‘Open Access in Social and Cultural Science’ (n 278) 424.

³⁰³ Ibid 431.

³⁰⁴ Ibid 442-443.

The **Social Science Research Network (SSRN)** has emerged as one of the major players in the open access to scholarship market. It is an electronic repository funded in 1994 by a group of scholars and composed of twenty-four specialised research networks in each of the social sciences.³⁰⁵ The SSRN eLibrary includes an Abstract Database containing abstracts on almost half a million scholarly working and forthcoming papers and an Electronic Paper Collection including approximately 400,000 downloadable full text pdf documents.³⁰⁶ The eLibrary is co-hosted by four institutions – the European Corporate Governance Institute in London, Korea University in Seoul, Stanford Law School in California and University of Chicago Booth School of Business in Illinois – providing mirror paper repositories for SSRN around the world, increasing response capacity, and serving as multiple backups for the paper database.

Although SSRN is an electronic repository which lacks quality control, the metrics that it includes, such as number of downloads, views, posted papers, and related rankings, may increasingly make it a valuable tool for accessing scholarly performance.³⁰⁷ Again, authors have highlighted the fact that publication on SSRN offers the opportunity to have a wide international readership.³⁰⁸ As Ian Ramsey argues, SSRN international readership may have particular advantages for authors in smaller countries in enabling them to build their scholarly reputation without the need to attend and present at international conferences, which may be prohibitive for scholars from emerging and developing countries.³⁰⁹ At this stage of the evolution of law journals and SSRN, however, the major advantages would be for authors to publish both in journals and on SSRN.³¹⁰ However, attitudes of journals to publication on SSRN may vary and present a challenge for the authors. There is a wide diversity of approaches, as some journals may oppose publication of pre-prints and

³⁰⁵ See Social Science Research Network <www.ssrn.com> accessed 23 May 2013 (currently SSRN covers the following social sciences and related research networks: Accounting, Anthropology & Archeology, Cognitive science, Corporate Governance, Economics, Entrepreneurship, Financial Economics, Health Economics, Information Systems & eBusiness, Innovation, Leadership, Legal Scholarship, Management, Marketing, Negotiations, Political Science, Social Insurance, Sustainability, Classics, English and American Literature, Music & Composition, Philosophy, Rhetoric and Communication). See also Norman Otto Stockmeyer, 'Do You SSRN?' (2011) *The Scrivener* 4 <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1727484> accessed 23 March 2013; Susan Duncan, 'Demystifying the SSRN Process: How to Make It Work for You' (2008) SSRN Working Paper Series <<http://ssrn.com/abstract=1166022>> accessed 13 June 2013; Victor Ricciardi, 'A Workshop on the Social Science Research Network' (2008) SSRN Working Paper Series <<http://ssrn.com/abstract=879685>> accessed 13 June 2013.

³⁰⁶ See SSRN (n 305).

³⁰⁷ See Bernard S Black and Paul L Caron, 'Ranking Law Schools: Using SSRN to Measure Scholarly Performance' (2006) 81 *Indiana LJ* 83.

³⁰⁸ *Ibid* (noting that in July 2005, 32 per cent of the SSRN's downloads were from the United States and 68 per cent were from other countries).

³⁰⁹ See Ian Ramsay, 'SSRN and Law Journals – Rivals or Allies?' (2012) 40 *IJLI* 134, 138-140.

³¹⁰ *ibid* 144.

published articles on SSRN or accept it. Again, other journals may ask for an embargo period before the article can be distributed on SSRN.³¹¹

The economics sector has established the largest open digital research library: **Research Papers in Economics (RePEc)**.³¹² RePEc is an international library of economics, which is the outcome of collaborative efforts of hundreds of volunteers in almost eighty countries. This is an add-on library, whose content is provided by a multitude of institutions, including economics departments, national research institutes, international organisations and publishers, by linking servers. RePEc links together 1,500 archives comprising a decentralised bibliographic database of 1.4 million research documents, encompassing working papers, journal articles, books, book chapters and software components, from 1,700 journals and 3,700 working paper series. RePEc also offers a search function to check if papers fed by publishers and linking to pay-per-view or subscription gates are available in OA elsewhere. Any new service willing to use and contribute to the RePEc data³¹³ must abide by the principles set by RePEc, stating that services are free to do whatever they want with the data collected in the archives, provided that: (a) they do not charge for it or include it in a service or product that is not free of charge; (b) when displaying the contents of a template they show the Title, Author-Name, and File-Restriction fields if they are present in the template; (c) they must participate in RePEc by maintaining an archive that actively contributes material to RePEc; (d) they do not contravene any copyright statement found in any of the participating archives; (e) they attribute RePEc as the source of the data.³¹⁴ Additionally, RePEc services are requested to report usage statistics that can be used towards RePEc rankings.³¹⁵ In fact, also, as economics working papers define the frontier of research, RePEc rankings and tracking of impact factors show that working paper series outpace the commercial journal.³¹⁶

Berkeley Electronic Press (BEPress) was initially founded by legal and economic academics in 1999 as an electronic publishing firm implementing a hybrid open access model.³¹⁷ It

³¹¹ Ibid 144-145.

³¹² RePEc <<http://repec.org>> accessed 14 June 2014.

³¹³ See RePEc (n 312) for a list of the services so far using and contributing to RePEc data. See also Thomas Krichel and Christian Zimmermann, 'The Economics of Open Bibliographic Data Provision' (2009) 39(1) *Economic Analysis and Policy* 143, 143-152 (discussing RePEc to show that open source bibliographic data collection is sustainable); Armbruster, 'Open Access in Social and Cultural Science' (n 278) 440-441.

³¹⁴ See Use of REPEc Data <<http://repec.org/docs/RePEcDataUse.html>> accessed 13 June 2013.

³¹⁵ See RePEc/IDEAS Rankings <<http://ideas.repec.org/top>> accessed 13 June 2013.

³¹⁶ Ibid; Armbruster, 'Open Access in Social and Cultural Science' (n 278) 441.

³¹⁷ Actually, BEPress subscription journals implemented a guest access policy, which was a middle ground between free OA and fee-based subscription access, where those without subscription could access an article by filling out a request that allowed BEPress to be informed of the libraries' interest in reading the journal

published journals in the social sciences, law and medical sectors before selling its portfolio to the academic publishing house Walter de Gruyter.³¹⁸ Although BEPress electronic journals represent an OAP experience which has recently proved to be unsuccessful – at least considering that it was not sustained in the long run but sold to a traditional academic publisher and turned into a gated access model – BEPress still pursues OAP goals through other services. It now offers open access publication tools such as the Digital Commons and the Selected Works, together with submission and editorial management tools. The BEPress Digital Commons is a suite of tools and services enabling institutions to manage, display and publish scholarship to the web.³¹⁹ Selected Works enables individual scholars to create a web page to announce and distribute research outputs and build a network of colleagues who follow their works.³²⁰

Although a large part of JSTOR's database still depends on institutional affiliation,³²¹ JSTOR has been increasingly pursuing OAP in the social and cultural sciences by making the Early Journal Content freely available and launching the Register and Read beta program. The Early Journal Content on JSTOR includes journal articles published in the United States before 1923 and articles published in other countries before 1870, which are made freely available without registration worldwide.³²² As part of the Early Journal Content program, JSTOR has also made a data bundle, including full-text OCR and article and title-level metadata, freely available to those who would like to conduct data mining or other research across the content.³²³ JSTOR's Register & Read program is a more marked move to promote

under the assumption that the libraries would have subscribed to the journal if sufficient interest in the same was shown. See Joshua Gans, 'Berkeley Electronic Press Closes Up Journals' (*Digitopoly*, 26 January 2012) <<http://www.digitopoly.org/2012/01/26/berkeley-electronic-press-closes-up-journals>> accessed 14 June 2013. See also Armbruster, 'Open Access in Social and Cultural Science' (n 278) 440-441 (noting that although BEPress journals were subscription based, they were priced significantly below the discipline's average and the rates of large commercial publishers, with average prices falling across the years rather than rising).

³¹⁸ On the reaction of turning the BEPress quasi open access model into gated access, see, for example, BEPress Journals Are Not Open Access Anymore (The RePEc Blog, 16 March 2013) <<http://blog.repec.org/2013/03/16/bepress-journals-are-not-open-access-anymore>> accessed 14 June 2013; Joshua Gans, 'Berkeley Electronic Press Closes Up Journals' (n 317) (noting that he has published with the BEPress journals because they had an open access policy and he supported the goal of coming up with an alternative system to fix the academic publishing market and concludes that 'the fact that somehow [his OA papers] could all be acquired by another firm represents a breach of, at the very least, an implicit agreement').

³¹⁹ See Digital Commons, About Digital Commons: The Hosted, Open Access Repository Solution <<http://digitalcommons.bepress.com/about>> accessed 13 June 2013.

³²⁰ See Selected Works <<http://works.bepress.com>> accessed 13 June 2013.

³²¹ See JSTOR, About <<http://about.jstor.org>> accessed 14 June 2013. See also, for a discussion of the JSTOR model, Armbruster, 'Open Access in Social and Cultural Science' (n 278) 439-440.

³²² See JSTOR, Early Journal Content <<http://about.jstor.org/service/early-journal-content-0>> accessed 14 June 2013.

³²³ See JSTOR, Early Journal Content Data Bundle <http://dfr.jstor.org/?view=text&&helpview=about_ejc> accessed 14 June 2013.

OA by offering free, read-online access to individual scholars and researchers without an affiliation who register for a MyJSTOR account.³²⁴ Again, JSTOR has also launched the Access for Alumni program with the aim ‘to extend access to scholarship to individuals around the world’ by enabling eligible higher education institutions to provide their alumni with full access to the same set of archive collection content available to current students and faculty’.³²⁵

1.4.6.2 Open Access to the Law and Legal Scholarship

The ‘free access to the law movement’ has become a sub-theme on its own within the general OAP movement.³²⁶ It initially emerged as a movement to promote OA to legal text and primary sources. As authors have suggested, open access to primary source legal materials – including statutes, regulations and case law – would explicate a democratic function.³²⁷ With time, free and open access to legal scholarship and commentary on the law has also become the object of increasing attention. Richard Danner has noted the ‘full understanding of authoritative legal texts requires access to informed commentary as well as to the texts of the law themselves.’³²⁸ Several initiatives have attempted to promote OAP in the legal field. In particular, two initiatives have given increased attention to open access to the law and open access to legal scholarship, respectively the Declaration on Free Access to the Law and the Durham Statement on Open Access to Legal Scholarship.

The Declaration on Free Access to the Law or Montreal Declaration has ignited the ‘movement for open access law.’³²⁹ The Montreal Declaration was issued by representatives of legal information institutes from all over the world at the 2002 International Conference on Law via the Internet under the aegis of the World Legal Information Institute (WorldLII).³³⁰ The Declaration was later amended at meetings in Sydney in 2003, Paris in

³²⁴ See JSTOR, Register & Read <<http://about.jstor.org/rr>> accessed 14 June 2013.

³²⁵ JSTOR, Access for Alumni <<http://about.jstor.org/service/access-alumni>>

³²⁶ See Michael W Carroll, ‘The Movement for Open Access Law’ (2006) 10 Lewis & Clark L. Rev. 741 (exploring connections between the established movement for open access to primary materials, the general open access movement, and the impact of law reviews). See also Kevin P Brady and Justin M Bathon, ‘Education Law in a Digital Age: The Growing Impact of the Open Access legal Movement’ (2012) 277 Ed Law Rep 589; and, for a detailed history of the Open Access to Law movement, Graham Greenleaf, ‘The Global Development of Free Access to Legal Information’ in Abdul Paliwala (ed), *A History Of Legal Informatics* (Prensas Universitarias de Zaragoza 2010) 53-82.

³²⁷ See Armstrong, ‘Crowdsourcing And Open Access’ (n 152) 597; Armstrong, ‘Rich Text’ (n 152).

³²⁸ Richard A Danner, ‘Open Access to Legal Scholarship: Dropping the Barriers to Discourse and Dialogue’ (2012) 7(1) JICLT 65, 65.

³²⁹ See Danner, ‘Open Access to Legal Scholarship’ (n 328) 65.

³³⁰ See World Legal Information Institute, Declaration on Public Access to Law <<http://www.worldlii.org/worldlii/declaration>> accessed 1 June 2013.

2004 and Montreal in 2007.³³¹ The focus of the Declaration is on public legal information. Maximising access to this information – the Declaration continues – ‘promotes justice and the rule of law’ and they are ‘digital common property and should be accessible to all on a nonprofit basis and free of charge’.³³² Finally, the representatives of legal information institutes in Montreal have forcefully sought the support of governmental institutions in their quest for OAP in law by stating that ‘organisations such as legal information institutes have the right to publish public legal information and the government bodies that create or control that information should provide access to it so that it can be published by other parties’.³³³ In contrast to other OA Declarations, Darner has argued that the Montreal Declaration seems to come closer to suggesting a rights-based justification for OAP by declaring the right of ‘Independent non-profit organizations [. . .] to publish public legal information’.³³⁴ National emanations of the WorldLII, such as the Australian Legal Information Institute (AustLII),³³⁵ the Canadian Legal Information Institute (CanLII)³³⁶ and the Cornell Legal Information Institute (LII),³³⁷ have also promoted at local level the case of OA to the law and databases of public legal information. The British and Irish Legal Information Institute (BAILII)³³⁸ is a UK initiative furthering the goals of OA to the law. BAILII has also recently undertaken a JISC-funded Open Law Project³³⁹ to support teaching and learning in legal education by creating a free and open online database of important pre-2000 legal judgments – only in the late 1990s did the UK Court Service begin to assert explicitly Crown Copyright on the judgments and BAILII must presume that the vast majority of available

³³¹ Declaration on Open Access to the Law (n 330).

³³² Ibid.

³³³ Ibid. See also Graham Greenleaf, Philip Chung and Andrew Mowbray, ‘Emerging Global Networks for Free Access to Law’ WorldLII’s Strategies’ (2005) 1(1) J of Electronic Resources in L Lib <<http://ssrn.com/abstract=975614>> accessed 1 June 2013 (noting that only a minority of legal jurisdictions worldwide offer open electronic access to essential legal information).

³³⁴ Danner, ‘Open Access to Legal Scholarship’ (n 328) 66.

³³⁵ See Graham Greenleaf, Andrew Mowbray and Philip Chung (2011), ‘AustLII: Thinking Locally, Acting Globally’, (2011) 19(2) Australian Law Librarian 101, 101-115.

³³⁶ See Daniel Poulin, ‘Free Access to Law in Canada’ (2012) 12(3) LIM 165 (sketching the principles supporting free access and also trying to make the business case for establishing it; discussing also the creation of CanLII).

³³⁷ See Cornell University Law School Legal Information Institute <<http://www.law.cornell.edu>> accessed 1 June 2013.

³³⁸ See Cynthia Fellows, Philip Leith and Joe Ury, ‘Assessing BAILII 2012’ (2012) 12(3) LIM 148. See also Philip Leith and Cynthia Fellows, ‘Enabling Free Online Access To UK Law Reports: The Copyright Problem’ (2010) 18 IJLIT 72 (discussing access to law reports in the UK within the context of BAILII, an open access legal database that came about in part because of the copyrighted, privatised nature of law reporting in the UK and noting that public access to case law is an essential requirement in a democratic common system and BAILII should be seen as a potential step towards a National Law Library).

³³⁹ See What is the Open Law Project <<http://www.bailii.org/openlaw/introduction.html>> 1 June 2013.

judgments from the period prior to 2000 are subject to commercial copyright.³⁴⁰ All in all, the open access law movement has so far been quite successful, providing free access to nearly 1,200 databases from about 125 jurisdictions worldwide.³⁴¹

Promulgated in February 2009 by a group of academic law library directors from the top ten US Universities, the Durham Statement sought to promote OA to legal scholarship.³⁴² The declaration strived to achieve two major goals. On the one hand, the Durham Statement called for open access publication of law school-published journals. On the other hand, the Statement set the goal of putting at rest the print publication of law journals, coupled with a commitment to keeping the electronic versions available in 'stable, open, digital formats.'³⁴³ In looking at the results of the Statement two years after it was issued, authors have noted that while there has been an increase in the publication of law journals in openly available electronic formats, little movement towards all-electronic publication has been seen.³⁴⁴

Fostering goals similar to the Durham Statement, before being reintegrated with Creative Commons, the Science Commons launched the Open Access Law Program (OALP), a project to promote OA in law journal publishing,³⁴⁵ including a set of Open Access Law Journal Principles promulgated in 2005. These Principles require that a journal take only a limited term licence; provide a citable copy of the final version of the article; and provide public access to the journal's standard publishing contract. In return, the author promises to attribute first publication to the journal.³⁴⁶ The OAL Program also provides an Open Access Model Publishing Agreement embodying the OAL Journal Principles in a contract, together

³⁴⁰ See Leith and Cynthia Fellows, 'Enabling Free Online Access To UK Law Reports' (n 338) 14-15.

³⁴¹ See World Legal Information Institute (WorldLII) (providing access through its website and regional and national sites to the databases). Cf Thomas Shaw, 'Free v Fee: Drivers and Barriers to the Use of Free and Paid-for Legal Information Resources' (2007) 7(1) LIM 23 (discussing legal information professionals' perceptions of what facilitates and what impedes the use of free information resources and highlighting the need for content that is relevant for their user base, need of a guarantee of the provenance and quality of the information, need of speed of use and currency, need for such resources to promote themselves visibly; in the case of paid-for resources 'added-value' seems to be the key factor for their success against free resources).

³⁴² See Durham Statement on Open Access to Legal Scholarship <<http://cyber.law.harvard.edu.proxy.lib.duke.edu/publications/durhamstatement>> accessed 1 June 2013.

³⁴³ Ibid.

³⁴⁴ See Richard A Danner, Kelly Leong and Wayne V Miller, 'The Durham Statement Two Years Later: Open Access in The Law School Journal Environment' (2011) 103 Law Libr J 39 10 Nw. J. Tech. & Intell. Prop. 377.

³⁴⁵ See Science Commons, Open Access Law Principles <<http://sciencecommons.org/projects/publishing/oa-law>> accessed 1 June 2013.

³⁴⁶ See Science Commons, Open Access Law: Principles <<http://sciencecommons.org/projects/publishing/oa-law/principles>> accessed 1 June 2013.

with an easy mechanism for authors and journals to adopt Creative Commons licences.³⁴⁷ So far, however, the OAL Journal Principles have been only partially successful. Fewer than 50 law journals – nearly all from the US – have either adopted the principles or indicated that they are operating under policies consistent with them.³⁴⁸ In fact, the Directory of Open Access Journals (DOAJ) suggests that few law journals are freely available on the web. Of over 9,450 journals listed on DOAJ, only 180 are listed under law.³⁴⁹ The road to open access in legal scholarship is, therefore, still long and bumpy.

However, although numbers of OAP publications and repositories are still lagging behind when compared with other fields, legal scholarship now has a long tradition discussing the sustainability of traditional law review models in the digital environment and the additional issue of open access publishing.³⁵⁰ OAP seems to be changing legal scholarship in three different directions. In contrasting the old and the new world of legal scholarship, Lawrence Solum has argued that scholarship is moving from the long form to the short form, from a regime of exclusive rights to a regime of open access, and from intermediated to disintermediated forms of publication.³⁵¹ However, although weblogs or blogs have become

³⁴⁷ See Science Commons, Open Access Law: Publication Agreement <<http://sciencecommons.org/projects/publishing/oalaw/oalawpublication>> accessed 1 June 2013.

³⁴⁸ See Creative Commons, Open Access Law Adopting Journals <http://wiki.creativecommons.org/Open_Access_Law_Adopting_Journals> accessed 1 June 2013

³⁴⁹ See DOAJ, Subject Tree, <<http://www.doaj.org/doaj?func=subjectTree&uiLanguage=en>> accessed 1 June 2013.

³⁵⁰ For a literature review and historical discussion of open access and legal scholarship in the United States, see Stephanie L Plotin, 'Legal Scholarship, Electronic Publishing, and Open Access: Transformation or Steadfast Stagnation?' (2009) 101 L Library J 31, 40- <<http://ssrn.com/abstract=1350138>> accessed 18 January 2013. See also, for a description of a few practical implementations of OAP models in the legal arena, Josh Wilner, 'Editor's Note – Open Access to Legal Publishing' (2008) 2 McGill J L & Health 1 (presenting the McGill Journal of Law and Health, a new Canadian law journal, that embraces an OAP model and was unique among Canadian law journals at the time); Steven Whittle, 'Amicus Curiae Pro Bono Publico: Open Access Online Publication at the Institute of Advanced Legal Studies' (2012) 12(3) LIM 189 (discussing recent work at the Institute of Advanced Legal Studies to provide open online access to the IALS/SALS official journal *Amicus Curiae* and selected papers from the Institute's annual W. G. Hart Legal Workshop)

³⁵¹ See also Lawrence B Solum, 'Download it While it's Hot: Open Access and Legal Scholarship' (2006) 841 Lewis & Clark L. Rev. 841, 847-857 (also recounting the experience of his own 'Legal Theory Blog'). See also Lawrence B Solum, 'Blogging and the Transformation of Legal Scholarship' (2006) 84 Wash U L Rev 1071 (Solum's contribution to the Bloggership Symposium argues that law professor blogs constitute important indicators of the above mentioned three transformative trends and concludes that although blogs alone are not transforming legal scholarship, they do contribute to the transformation of legal scholarship by enabling experimentation).

a prominent feature of scholarly legal culture,³⁵² reputational value seems to guarantee the endurance of intermediated forms of publications and law reviews in particular.³⁵³

Although law journal subscription rates have not escalated like other journal prices,³⁵⁴ open access models have been increasingly appealing also for legal scholars, also in light of the duopolistic power that Westlaw and Lexis exercise on the legal database market.³⁵⁵ In a Symposium on Open Access Publishing and the Future of Legal Scholarship organised by the Lewis & Clark Law Review, Joseph Miller highlighted four reasons why law professors should take an interest in the OAP movement.³⁵⁶ In Miller's view, open access in scholarship extends the reach of participating scholars and conversely dramatically reduces the cost at which people outside the academic community can access the information. Again, OAP increases distribution speed and adds measures of scholarly impact. In fact, uploading a new paper on platforms like the Social Science Research Networks (SSRN) makes it available to others immediately and offers the possibility to view real-time, rank-ordered lists of the most frequently downloaded papers. Finally, open access scholarship may propel the cumulative creation of a new social layer of metadata connecting and commenting on scholarship. In turn, this may provide a new networked social capital of user-written semantic tags that define connection between works and that others can see and re-aggregate in an infinite number of ways.

In order to increase the OAP figures in legal scholarship, authors have been proposing that law schools or other entities form a consortium in order to publish and freely disseminate

³⁵² See Plotin, 'Legal Scholarship, Electronic Publishing, and Open Access' (n 350) 54-56.

³⁵³ A discussion on the sustainability of law reviews in the digital environment has been started in the US by Bernard J Hibbitts, 'Last Writes? Reassessing the Law Review in the Age of Cyberspace' (1996) 71 NYU L Rev 615. In his article, Hibbitts predicted the demise of law reviews, with legal scholars instead self-publishing on their personal websites. Hibbitts' article has started a heated debate with many responses promoting the opinion that law reviews are likely to be around for quite a while, especially for their reputational value and their importance for tenure and promotion. See David A Rier, 'The Future of Legal Scholarship and Scholarly Communication: Publication in the Age of Cyberspace' (1996) 30 Akron L Rev. 183, 188-210; Thomas R Bruce, 'Swift, Modest Proposals, Babies, and Bathwater: Are Hibbitts's Writes Right?' (1996) 30 Akron L Rev. 243, 243. See also Shawn G Pearson, 'Comment, Hype or Hypertext? A Plan for the Law Review to Move into the Twenty-First Century' (1997) 1997 Utah L Rev 765, 798 (discussing the 'young professor dilemma,' the tension between publishing in electronic journals and the concern that tenure committees would not give weight to electronic publications).

³⁵⁴ See Joseph S Miller, 'Foreword: Why Open Access To Scholarship Matters' (2006) 10 Lewis & Clark L Rev 733, fn 12 (mentioning only US law review escalation in prices over the last two decades).

³⁵⁵ For a detailed account of the rise of the duopolistic power of Westlaw and Lexis and their new moves and challenges in the legal database market, see David Hall, 'Google, Westlaw, LexisNexis and Open Access: How the Demand for Free Legal Research will Change the Legal Profession' (2012) 26 Syracuse Sci. & Tech. L. Rep. 53.

³⁵⁶ Miller, 'Foreword' (n 354).

legal scholarship on the Internet.³⁵⁷ With special emphasis on the United States legal market, Ian Gallacher explains why law schools are uniquely suited to respond to these problems and concludes with ten proposed principles that might guide an open-access legal information site, which should be (i) free and accessible to all, (ii) as complete and as comprehensive as possible, (iii) flexible, (iv) capable of permitting indexed and non-indexed searches, (v) able to permit fast retrieval of information, (vi) reliable, (vii) permanent, (viii) using a neutral citation format to identify source material, (ix) include a citatory, and (x) encourage community involvement in its growth.³⁵⁸ Again, Hunter has argued that traditional law reviews should lead the way to the open-access model.³⁵⁹ First, open access is particularly suited to law review publishing, as the content of law review articles is determined by non-commercial considerations.³⁶⁰ Again, at least in the United States, law reviews seem to be a perfect fit for open access models, because both the first copy cost of generating and publishing legal scholarship is almost completely subsidised by the legal academy and the royalties that law reviews receive from legal databases should not be affected by open access, as users still purchase these databases for the search capabilities added value that they provide.³⁶¹

1.5. FROM 'ELITE-NMENT' TO OPEN KNOWLEDGE ENVIRONMENTS

In reading the literature, there seems to be a shared perception that the path to digital enlightenment may pass through OA to scientific knowledge. In a momentous speech at the European Organization for Nuclear Research (CERN) in Geneva, Professor Lawrence Lessig reminded the audience of scientists and researchers that most scientific knowledge is locked away for the general public and can only be accessed by professors and students in a university setting. Lessig strongly made the point that 'if you are a member of the knowledge elite, then there is free access, but for the rest of the world, not so much [. . .] publisher

³⁵⁷ See Open Law Journals Group, 'Justification and Draft Principles for an Open Law Journals Group' (2009) 6(3) SCRIPT-ed 747 <<http://www.law.ed.ac.uk/ahrc/script-ed/vol6-3/openlaw.asp>> accessed 8 February 2013 (discussing the creation of a community which represents the interests of OA journals and the free utilisation of high quality scholarship); Ian Gallacher, "'Aux Armes, Citoyens!': Time for Law Schools To Lead The Movement for Free and Open Access to the Law' (2008) 40 U Tol L Rev 1.

³⁵⁸ See Gallacher, 'Aux Armes, Citoyens!' (n 357) 32-48.

³⁵⁹ See Hunter, 'Walled Gardens' (n 194) (using results from his 2004 survey of law review publication policies, he argues that law reviews should lead the way to democratising access to developments in legal scholarship by providing free, public access to all their published literature).

³⁶⁰ See Dan Hunter, 'Open Access to Infinite Content (or "In Praise of Law Reviews")' (2006) 10 Lewis & Clark L Rev 761 (Hunter defends traditional US student-edited law reviews, encouraging law reviews to move to an open-access model, which, in Hunter's view, fits student-edited law reviews better than their commercially produced, peer-refereed cousins). See also Roderick A Macdonald, 'Who's Afraid of the Cyber-Law-Journal' (2011) 36 Queen's L J 345.

³⁶¹ See Jessica Litman, 'The Economics of Open Access Law Publishing' (2006) 10 Lewis & Clark L. Rev. 779, 789-792. See also Plotin, 'Legal Scholarship, Electronic Publishing, and Open Access' (n 350) 42-43.

restrictions do not achieve the objective of enlightenment, but rather the reality of “elite-nment.”³⁶² Other authors have largely reinforced this point. Willinsky, for example, suggested that, as its key contribution, OAP models may move ‘knowledge from the closed cloisters of privileged, well-endowed universities to institutions worldwide’.³⁶³ This idea has been closely connected with a true responsibility of the academic community towards expanding OAP. Willinsky again advocated the idea that scholars have a responsibility to make their work available OA globally by referring to an ‘access principle’ and noting that ‘a commitment to the value and quality of research carries with it a responsibility to extend the circulation of such work as far as possible and ideally to all who are interested in it and all who might profit by it’.³⁶⁴ Carroll has equally suggested that technological innovation, together with its benefits, imposes on scholars ‘a duty to make his or her work available to the general (or, for the time being, Internet-accessible) public’.³⁶⁵ Building on Willinsky and Carroll’s conclusions, Danner envisaged a similar responsibility with specific emphasis on legal scholarship.³⁶⁶ Danner stressed that these responsibilities should inform the behaviour of all the participants in the scholarly communications process, including not only the creators, but also the institutions that support their work.³⁶⁷ In this sense, the true challenge ahead for the OAP movement is to turn university environments,³⁶⁸ and the knowledge produced therein, into a more easily and freely accessible public good, perhaps better integrating the OAP movement with Open University and Open Learning.

1.5.1 Universities and Open Access

³⁶² See Lawrence Lessing, ‘[The Architecture of Access to Scientific Knowledge: Just How Badly we Have Messed This Up](http://cdsweb.cern.ch/record/1345337)’ (speech delivered at CERN Colloquium and Library Science Talk) (April 18, 2011), <<http://cdsweb.cern.ch/record/1345337>>.

³⁶³ Willinsky, *The Access Principle* (n 3) 33.

³⁶⁴ *Ibid* xii.

³⁶⁵ Carroll, ‘The Movement for Open Access Law’ (n 326) 756.

³⁶⁶ Richard A Danner, ‘Applying the Access Principle in Law: the Responsibilities of the Legal Scholar’ (2007) 35 *Int’l J Legal Info* 355.

³⁶⁷ *Ibid* 358-359.

³⁶⁸ Also the library has a critical role in the new digital order to promote the creation of integrated OA and Open Learning and Open Knowledge environments. For a review of the changes the academic libraries are undergoing in the digital age and effects of OAP, see, for example, Julian Aiken, Femi Cadmus, Fred Shapiro, ‘Not Your Parents’ Law Library: A Tale of Two Academic Law Libraries’ (2012) 16 *Green Bag* 2d 13; Richard A Danner, ‘Supporting Scholarship: Thoughts on the Role of the Academic Law Librarian’ (2010) 39 *J L & Educ.* 365; John Palfrey, ‘Cornerstones of Law Libraries for an Era of Digital Plus’ (2010) 102 *Law Libr. J.* 171; Jonathan Sims, ‘Librarianship in the 21st century a British Library Perspective’ (2008) 8(2) *LIM* 84; Ruth Bird, ‘(Arthur C Clarke, we Still Need You): Trying to Predict Our Future at the Bodleian Law Library’ (2008) 8(2) *LIM* 91; Claire M Germain, ‘Legal Information Management in a Global and Digital Age: Revolution and Tradition’ (2007) 35 *Int’l J Legal Info* 134.

Criticising the university for having become part of the problem of enclosure of scientific commons by ‘avidly defending their rights to patent their research results, and licence as they choose’, Richard Nelson has argued that ‘the key to assuring that a large portion of what comes out of future scientific research will be placed in the commons is staunch defense of the commons by universities’.³⁶⁹ Nelson continues by arguing that if universities ‘have policies of laying their research results largely open, most of science will continue to be in the commons’.³⁷⁰ The role of universities in the OA and OAP movement is indeed critical and more than any other institutions they may promote the goals of ‘open science’.

In this respect, a Statement from the European University Association (EUA) Working Group on Open Access has stressed ‘[u]niversities’ public role and responsibility as “guardians” of research knowledge/results as “public goods”’.³⁷¹ In establishing its Working Group on Open Access, EUA aimed at creating a European platform of expert opinion to set European universities as major stakeholders in the OAP policy debate.³⁷² The EUA Working Group highlighted the fact that the participation of universities in the OAP debate should be guided by the need for well-functioning networked OA repositories, the strengthening of non-exclusive copyright through the promotion of model copyright agreements at university/institutional, as well as individual researcher, level, and the encouragement of OAP business models and peer review and quality control mechanisms by academic researchers for OA journals.³⁷³

1.5.2 Open University and Open Learning

Armbruster includes among the major innovations of OAP knowledge exchanges featuring ‘area reviews that delimit knowledge and method, contain extensive bibliographies and are suitable for teaching and learning’.³⁷⁴ Examples in this respect are Open Learn at Open University, Open CourseWare at MIT and Living Reviews. Again, initiatives have been undertaken to open access to academic textbooks.³⁷⁵ While the OA movement has focused

³⁶⁹ Nelson, ‘The Market Economy, and the Scientific Commons’ (n 157) 467.

³⁷⁰ Ibid.

³⁷¹ European University Association (EUA), Statement from the EUA Working Group on Open Access <http://www.eua.be/Libraries/Page_files/EUA_WG_open_access_1.sflb.ashx> accessed 14 June 2013.

³⁷² Ibid.

³⁷³ Ibid.

³⁷⁴ Armbruster, ‘Open Access in Social and Cultural Science’ (n 278) 428.

³⁷⁵ See Nicole A Nguyen, ‘Not All Textbooks are Created Equal: Copyright, Fair Use, and Open Access in the Open College Textbook Act Of 2010’ (2010) 21 DePaul J Art Tech & Intell Prop L. 105 (discussing a US federal initiative to create OA textbooks, the Open College Textbook Act of 2010). Also, specific proposals have been made to promote an open-source approach to casebooks in the legal field, for example. See Matthew T Bodie, The Future of the Casebook: An Argument for an Open-Source Approach, (2007) 57(1) J Leg Educ 10, 10-35 <<http://ssrn.com/abstract=691985>> accessed 15 June 2014 (arguing for the creation of ‘a database with all the

so far primarily on academic scholarship, OA principles and OAP could equally transform education and the pedagogical process by promoting ‘new pools of course materials for professors to draw on, new means of interaction and collaboration between professors and students, and new possibilities for restructuring the law school curriculum’.³⁷⁶

In the same context, the future of the OA and OAP movements seems to be tightly intertwined with notions of Open Education (OE), open universities and Open Educational Resources (OERs). Also, the role of Massive Open Online Classes (MOOCs) in the transformation of higher education and science and OA to academic research is still to be seen, but the emergence of MOOCs is a factor soon to be considered in the global OAP debate.³⁷⁷ In connection with OE – a term referring to educational organisations striving to eliminate barriers to entry, such as the Open University in the United Kingdom³⁷⁸ – the OERs movement has emerged to counter commodification of learning and teaching resources, reduce the educational divide between developed and developing countries, and promote an alternative educational paradigm.³⁷⁹ The Organization for Economic Co-operation and

individual components of a casebook’ which contains editable files that professors could then pick up, choose and assemble into a package for the course; the database could also allow individual professors to upload their own compilations, becoming an open ongoing teaching tool updated daily by the users). Cf Lydia Pallas Loren, ‘The Viability of the \$30 (or Less) Casebook’ (2013) Lewis & Clark Law School Legal Studies Research Paper 2013/19 <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2268057##> accessed 13 July 2013.

³⁷⁶ Matthew T Bodie, ‘Open Access in Law Teaching: A New Approach to Legal Education’ (2006) 10 Lewis & Clark L Rev 885, 898 (arguing that an open-access approach to legal education could transform the nature and structure of legal education into open-access law school).

³⁷⁷ See, discussing the emergence of MOOCs, Mitchell Waldrop and Nature Magazine, ‘Massive Open Online Courses, aka MOOCs, Transform Higher Education and Science’ (Scientific American, 13 March 2013) <<http://www.scientificamerican.com/article.cfm?id=massive-open-online-courses-transform-higher-education-and-science>> accessed August 25, 2013.

³⁷⁸ The open university movement was born in the United Kingdom during the 1960s. Open universities are now found in Hong Kong, Israel, Sri Lanka, Canada and elsewhere. See Open University, History of the OU <<http://www.open.ac.uk/about/ou/p3.shtml>> accessed 15 April 2013. The Open University also has a 17th century precedent in Gresham College, where the Royal Society of London took shape in the mid-1600s, as it had been established in 1598 with seven professorships lodged in Thomas Gresham’s London mansion for the purpose of, along with their studies, reading public lectures in Law, Rhetoric, Divinity, Music, Geometry and Astronomy. See Francis Johnson, ‘Gresham College: Precursor of the Royal Society’ (1940) 4(1) Journal of the History of Ideas 413, 413–438.

³⁷⁹ See Daniel E Atkins, John Seely Brown and Allen L Hammond, ‘A Review of the Open Educational Resources (OER) Movement: Achievements, Challenges, and New Opportunities’ (The William and Flora Hewlett Foundation 2007) <<http://www.hewlett.org/uploads/files/ReviewoftheOERMovement.pdf>> accessed 15 June 2013. See also Rory McGreal, Wanjira Kinuthia and Stewart Marshall (eds), *Open Educational Resources: Innovation, Research and Practice* (Commonwealth of Learning and Athabasca University 2013) <https://oerknowledgecloud.org/sites/oerknowledgecloud.org/files/pub_PS_OER-IRP_web.pdf> accessed 15 June 2013; Eileen Scanlon, ‘Digital Futures: Changes in Scholarship, Open Educational Resources and the Inevitability of Interdisciplinarity’ (2012) 11 Arts and Humanities in Higher Education 177 <<http://ahh.sagepub.com/content/11/1-2/177>> accessed 15 June 2013; Stephen Downes, ‘Free Learning: Essays on Open Educational Resources and Copyright’ (National Research Council of Canada 2011) <<http://www.downes.ca/files/books/FreeLearning.pdf>> accessed 15 June 2013; Sally M Johnstone, ‘Open

Development (OECD) has authoritatively defined OER as ‘digitised materials offered freely and openly for educators, students, and self-learners to use and reuse for teaching, learning, and research. OERs include learning content, software tools to develop, use, and distribute content, and implementation resources such as open licences’.³⁸⁰ Among the many international organisations and institutions fostering the agenda of OERs, the United Nations Educational, Scientific and Cultural Organization (UNESCO) had a leading role in the development and promotion of the notion of OER and its emphasis on the educational divide between global North and global South, with the term Open Educational Resources (OERs) coined at UNESCO’s 2002 Forum on the Impact of Open Courseware for Higher Education in Developing Countries.³⁸¹ The integrated effects of OE and OERs were restated – and formalised into a global movement – by the Cape Town Open Education Declaration stating, *inter alia*, that the

emerging open education movement combines the established tradition of sharing good ideas with fellow educators and the collaborative, interactive culture of the Internet. It is built on the belief that everyone should have the freedom to use, customize, improve and redistribute educational resources without constraint.³⁸²

Educational Resources Serve the World’ (2005) 28(3) Educause Quarterly 15 <<http://www.educause.edu/ero/article/open-educational-resources-serve-world>> accessed 15 June 2013.

³⁸⁰ Center for Educational Research and Innovation (CERI), *Giving Knowledge for Free: The Emergence of Open Educational Resources* (OECD Publishing 2007) 10 <<http://www.oecd.org/edu/ceri/38654317.pdf>> accessed 15 June 2013. For additional often cited definitions and discussion of the notion of OERs, see Commonwealth of Learning, Open Educational Resources <<http://www.col.org/resources/crsMaterials/Pages/OCW-OER.aspx>> accessed 15 June 2013 (adopting the widest definition of OERs as ‘materials offered freely and openly to use and adapt for teaching, learning, development and research’); The William and Flora Hewlett Foundation, Open Educational Resources <<http://www.hewlett.org/programs/education-program/open-educational-resources>> accessed 15 June 2013 (‘OER are teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others. Open educational resources include full courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials, or techniques used to support access to knowledge’).

³⁸¹ See United Nations Educational, Scientific and Cultural Organization (UNESCO), Forum on the Impact of Open Courseware for Higher Education in Developing Countries, Final Report, CI-2002/CONF.803/CLD.1, 1-3 July 2002 <<http://unesdoc.unesco.org/images/0012/001285/128515e.pdf>> accessed 15 June 2013. Also, recently, UNESCO has adopted the OER global logo for use in multiple languages. See Jonathas Mello, ‘Global OER Logo’ (UNESCO 2012) <http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/CI/pdf/Events/global_oer_logo_manual_en.pdf> accessed 1 July 2013.

³⁸² See Cape Town Open Education Declaration: Unlocking the Promise of Open Educational Resources (2007) <<http://www.capetowndeclaration.org/read-the-declaration>> accessed 15 June 2013. See also Andrew Deacon and Catherine Wynsculley, ‘Educators and the Cape Town Open Learning Declaration: Rhetorically Reducing Distance’ (2009) 5(5) International Journal of Education and Development using ICT <<http://ijedict.dec.uwi.edu/viewarticle.php?id=878&layout=html>> accessed 15 June 2013. Additional declaration to foster OERs has followed since the Cape Town Declaration. See, among them with references to other declarations and guidelines, UNESCO 2012 Paris OER Declaration approved at the 2012 World Open Educational Resources (OER) Congress, UNESCO, Paris, 20-22 June 2012 <http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/CI/pdf/Events/Paris%20OER%20Declaration_01.pdf> accessed 15 June 2014.

In the context of the promotion of OERs, OER policies are increasingly emerging at different levels with the aim of setting principles in order to support and promote the production and circulation of open materials and practices in educational institutions. In the United Kingdom, for example, HEFCE, the UK Higher Education Academy and JISC have funded the OERs Programme in order to support projects and activities in connection with the open release of learning and teaching resources, which can be freely used and repurposed worldwide.³⁸³

The Massachusetts Institute of Technology (MIT) has been playing a leading role in the OERs movement through the Open Knowledge Initiative,³⁸⁴ Open CourseWare, and DSpace,³⁸⁵ all devoted to opening access to intellectual resources, including software and research, often with corporate patronage. Pivotal to MIT's OERs action is OpenCourseWare (OCW), which has been a pioneer project in the field and an inspiration for the emerging OERs movement and also served as an inspiration for the first UNESCO Forum on OERs. OCW is the digital teaching library of MIT, which offers an open digital publication of teaching materials including MIT's undergraduate and postgraduate syllabi, lectures and other course materials.³⁸⁶ The project gives access to materials from more than 2,100 courses to one million international visitors each month, for the majority self-learners and students.³⁸⁷ OCW materials have been translated into several languages and are made available under a Creative Commons Attribution Licence, which prohibits the commercial use of the materials. Similarly, OCW materials are used by educators, amounting to around 10 per cent of OCW users, for incorporation into their courses.

Among the other examples of OERs, the Open University's website OpenLearn follows an emerging trend among some universities to make course materials freely available online.³⁸⁸ As the Open University website claims, the aim of OpenLearn is 'to break the barriers to education by reaching millions of learners around the world, providing free educational resources and inviting all to sample courses that our registered students take – for free'.³⁸⁹

³⁸³ This OERs Programme had several phases, the last being phase 3, which ended in October 2012. Several ongoing projects, such as PARiS at the University of Nottingham, were started at the university level. See JISC, Research and Development, Programmes, Academy/JISC Open Educational Resources Programme Phase 3 <<http://www.jisc.ac.uk/whatwedo/programmes/ukoer3.aspx>> accessed 15 June 2013.

³⁸⁴ See Open Service Interface Definitions (OSID) <<http://osid.org>> accessed 15 June 2013.

³⁸⁵ DSpace@MIT is the digital archive of MIT Libraries, offering predominantly OA content. See DSpace@MIT <<http://dspace.mit.edu>> accessed 15 June 2013.

³⁸⁶ See MITOpenCourseWare <<http://ocw.mit.edu/index.htm>> accessed 13 June 2013.

³⁸⁷ See, for complete statistics of OCW, MIT OpenCourseWare, '2011 Program Evaluation Findings Summary' (22 November 2011).

³⁸⁸ See The Open University, OpenLearn <<http://www.open.edu/openlearn>> accessed 13 June 2013.

³⁸⁹ Ibid.

Independent learners can study a range of modules taken from current Open University degree programmes. All content is covered by a CC 'Attribution Non-Commercial Share Alike' licence. OpenLearn offers a mix of learning resources, including interactives, games, video, podcast, and more traditional scholarly outputs, together with community tools for joining debates about each subject matter, rating the project and sharing the materials with fellow learners.

1.5.4 Open Knowledge Environments

In conclusion, it is worth noting a proposal that is intended to integrate OA, OAP and the university infrastructure into an enhanced networked knowledge production environment. Seeking to reap the full value that open access can yield in the digital environment, Jerome Reichman and Paul Uhler proposed a model of open knowledge environments (OKEs) for digitally networked scientific communication.³⁹⁰ OKEs would 'bring the scholarly communication function back into the universities' through 'the development of interactive portals focused on knowledge production and on collaborative research and educational opportunities in specific thematic areas.'³⁹¹ The OKE model would build upon online peer production and participative web 2.0 environments and techniques.

The OKEs would transform the traditional scientific journal model into a 'truly interactive networked mechanism for integrated knowledge production and reuse.'³⁹² The OKE would be developed around thematically linked open access journals. Additionally, openly available reports, grey literature and data would augment the OKE. Various interactive functions, such as wikis, discussion forums, blogs, post publication reviews, and distributed computing, would be added to stimulate discussions and contributions. Finally, semantic web technologies would be added to increase the opportunities for automated knowledge generation, extraction and integration, and the OKE could encode references under a unified numbering system for easy search and integration of information.

Several options would be available for setting up the physical location of the OKEs. The OKEs could be hosted at single universities, or the components of the OKEs may be

³⁹⁰ See Paul F Uhler, 'The Emerging Role of Open Repositories for Scientific Literature as a Fundamental Component of the Public Research Infrastructure' in G Sica (ed), *Open Access: Open Problems* (Polimetrica 2006). See also Reichman, Uhler and Dedeurwaerdere, *Governing Digitally Integrated Genetic Resources, Data, and Literature* (n 167).

³⁹¹ Paul F Uhler, 'Revolution and Evolution in Scientific Communication: Moving from Restricted Dissemination of Publicly-Funded Knowledge to Open Knowledge Environments' (2nd COMMUNIA Conference, Turin, 28 June 2009). See also Paul F Uhler, 'Designing the Digital Commons in Microbiology — Moving from Restrictive Dissemination of Publicly Funded Knowledge to Open Knowledge Environments: A Case Study in Microbiology' in Paul F Uhler, *Designing the Microbial Research Commons: Proceedings of an International Symposium* (National Academies Press 2011)

³⁹² Ibid.

distributed among a consortium of universities sharing a privileged interest in a specific subject matter. Alternatively, the OKEs could be based at not-for-profit research centres or government agencies. The OKEs would be multidisciplinary in character by bringing in the experts in the specific subject matters, in-house computer engineers, information scientists and librarians to help establish and manage the OKEs. As a consequence of being integrated directly into the curricula or research functions of the host organisations, the OKEs would have low overhead operating costs by using on-site personnel and students. Additionally, financial sustainability of OKEs would be provided by grants and other positive externalities that the OKEs will attract to the hosting organisations.

1.6 CONCLUSIONS

Authors have argued that the current economic crisis of academic publishing driving academia to alternative models is leading the system of formal scholarly publication to enter its third phase of evolution: a phase of '(re)de-commodification in academic knowledge distribution'.³⁹³ This phase is increasingly taking shape and 'is characterized by a strong de-commodified core with only niches for commercial publishers – in contrast to phase II which was the age of increasing commodification'.³⁹⁴ In this respect, the current phase seems to be witnessing a return to the traditional scientific ethos of openness that has dominated the field for many centuries in the past. As the Royal Society has stressed, the Internet plays a critical role in opening up opportunities to this new era of scientific publishing by providing 'a conduit for networks of professional and amateur scientists to collaborate and communicate in new ways and [paving] the way for a second open science revolution, as great as that triggered by the creation of the first scientific journals'.³⁹⁵

New OA publication channels, such as repositories, journals and increasingly books, have promoted this 'second open science revolution' by giving practical implementation to a set of OAP principles that the civil society has been developing in the last two decades or so. This renewed emphasis on the openness of scholarly research has been consolidated into a real OAP movement, which has been quickly exported from the STEM sector to the social sciences and any other field of research. The next challenge and aspiration seems to be the full integration of the OAP principles into the university environment, through an integrated interplay between OAP, OE, OERs and possibly new educational venues, such as MOOCs.

³⁹³ See Nentwich, '(Re-)De-Commodification in Academic Knowledge Distribution?' (n 41) 21.

³⁹⁴ Ibid 21.

³⁹⁵ See also Royal Society, *Science as Open Enterprise* (n 161) 7.

PART 2 – LEGAL FRAMEWORK AND COPYRIGHT

ABSTRACT

This section examines the legal framework that governs access to scientific information, with special emphasis on the role of copyright in academic publishing and the possible collision between copyright protection and access to knowledge. Initially, Section 2.1 briefly introduces in general terms a review of the copyright paradox and the increasing tension between circulation of knowledge, the survival of a healthy public domain, and copyright protection due to a seemingly relentless expansion and extension of private entitlements over knowledge-based goods. This review is carried out with the principal goal of highlighting the unresolvable tensions that a wider diffusion of OA and OAP models would redress in part. Section 2.2 turns then to discuss specific issues surrounding copyright and scholarly publishing and the literature dealing with them. Special emphasis is given to a review of the sustainability of the traditional copyright rationale and economics in academic publishing. We also look at questions related to ownership, transfer and licensing of academic works. Finally, Section 2.3 contextualises OAP within the international framework, with the main goal of assessing the effects of OAP as part of a broader discourse on Access to Knowledge (A2K) and the cultural, educational and recently digital divide between developed and developing countries.

2.1 COPYRIGHT/ACCESS TENSIONS

The undeniable tension between access to information and the copyright system is represented by an equation where the enclosure of the public domain is proportional to the expansion of the copyright protection. This tension is unavoidable and originates from the dual functionality of knowledge as a commodity and as a driving social force.³⁹⁶ In the words of Lord Mansfield in *Sayre v. Moore*:

[w]e must take care to guard against two extremes equally prejudicial; the one, that men of ability, who have employed their time for the service of the community, may not be deprived of their just merits, and the reward of their ingenuity and labour; the other, that the world may not be deprived of improvements, nor the progress of the arts be retarded.³⁹⁷

³⁹⁶ See Jerome H Reichman and Jonathan A Franklin, 'Privately Legislated Intellectual Property Rights: Reconciling Freedom of Contract with Public Good Uses of Information' (1999) 147 U Penn L Rev 875.

³⁹⁷ *Sayre v. Moore* (1785) 1 East 361 (Lord Mansfield).

Professor Hugenholtz has referred to this tension as the ‘paradox of intellectual property’ because intellectual property is a ‘system that promotes, or at least, aspires to promote knowledge, dissemination, cultural dissemination by restricting it,’ by creating temporary monopolies in expressed ideas or in applied invention.³⁹⁸ Article 27 of the Universal Declaration of Human Rights sets the modern legal reference to the intellectual property paradox.³⁹⁹ The acknowledgment of a right to access to knowledge is stated in paragraph one: ‘[e]veryone has the right freely to participate in the cultural life of the community, to enjoy the arts and to share in scientific advancement and its benefits.’ The second paragraph spells out the protection of the second term of the intellectual property paradox: ‘[e]veryone has the right to the protection of the moral and material interests resulting from any scientific, literary or artistic production of which he is the author.’

2.1.1 Copyright Extension and Expansion

As we have mentioned at the beginning of Section I of this study, the recent history of copyright has seen the progressive expansion of property rights. Protected subject matter has been systematically expanded for longer and longer periods of time. A strong intellectual property rhetoric has harshened the access/protection tension encompassed in the copyright paradox. By increasing the asset value of copyright interests, copyright term extension is one basic tool of commodification of information. Copyright term extension may be singled out as the clearest evidence of the progressive expansion of property rights. The Statute of Anne provided for fourteen years of protection renewable for a term of an additional fourteen years if the author was still alive at expiration of the first term.⁴⁰⁰ Today, the oldest work still in copyright in the United Kingdom dates from 1859.⁴⁰¹ The timeline of temporal extension of copyright protection shows a similar steady elongation in all international jurisdictions.⁴⁰² However, copyright term extension is one among several other

³⁹⁸ P Bernt Hugenholtz, ‘Owning Science: Intellectual Property Rights as Impediments to Knowledge Sharing’ (2nd COMMUNIA Conference, Turin, June 29, 2011) <http://www.communia-project.eu/communi/files/Conf%202009%20AuKS_Hugenholtz.ogg> accessed 03 May 2013. See also Neil Netanel, *Copyright’s Paradox* (OUP 2008).

³⁹⁹ See Universal Declaration of Human Rights, G.A. Res. 217 (III) A, U.N. Doc. A/RES/217(III), at Art. 27 (Dec. 10, 1948).

⁴⁰⁰ See Statute of Anne 1709 (8 Ann c 19).

⁴⁰¹ See Anna Vuopala, ‘Assessment of the Orphan Works Issue and Cost for Rights Clearance’ (European Commission, DG Information Society and Media, Unit E4, Access to Information, 2010) 10.

⁴⁰² In Europe, the Council Directive 93/98/EC has extended the copyright protection of authors from life plus 50 years to life plus 70 years. Recently, an additional extension of the term of protection for performers and sound recordings has been adopted by the European Parliament. See European Parliament and Council Directive 2011/77/EU Amending Directive 2006/116/EC on the Term of Protection of Copyright and Related Rights, 2011 O.J. (L 265) 1 (September 27, 2011) <<http://eur-lex.europa.eu>> accessed 3 May 2013. In the United States, see, for example, David and Rubin, ‘Restricting Access to Books on the Internet’ (n 435) 28-31 (noting that the term of copyright protection in the United States has crept steadily upward over the last two centuries as well, from

tools of commodification of information, including copyright subject-matter expansion, multiplication of strong commercial rights, and erosion of fair dealings rights, exceptions and limitations.⁴⁰³ Copyright protection has been expanded from books to maps and photographs, to sound recording and movies, to software and databases. As in the case of the introduction of *sui generis* database rights in the European Union – a quintessential example of the process of commodification of information – new quasi-copyrights have been created.⁴⁰⁴ Additionally, subject-matter expansion has been coupled with the attribution of

14 years with an option to renew for another 14 in 1790, to 28 years with an option to double that in 1909, to life plus first 50 years in 1976 and then plus 70 years in 1998); *Eldred v. Ashcroft*, 537 U.S. 186 (2003) (where the Supreme Court has backed up the practice of extending copyright, which was challenged on constitutional grounds); *Golan et al. v. Holder*, No. 10-545 (Supreme Court, 18 January 2012) (Syllabus) <www.supremecourt.gov> accessed 3 May 2013 (sustaining the practice of restoring into copyright public domain international works as introduced by U.S.C. §17-104A in 1994). For a discussion of the supporting economic arguments, which seems to be lacking, for retroactive copyright extension, see Hal R Varian, 'Copyright Term Extension and Orphan Works' (2006) 15 *Industrial and Corporate Change* 965, 968 (noting that 'what matters for the authors are the incentives present at the time the work is created'); Natali Helberger, Nicole Dufft, Stef van Gompel and P. Bernt Hugenholtz, 'Never Forever: Why Extending the Term of Protection for Sound Recordings is a Bad Idea' (2008) *EIPR* 174; P Bernt Hugenholtz and others, 'The Recasting of Copyright and Related Rights for the Knowledge Economy 83-137 (European Commission, DG Internal Market, November 2006) <http://www.ivir.nl/publications/other/IViR_Recast_Final_Report_2006.pdf> (putting forward several legal, economic and competition arguments against the extension of neighbouring rights); Wendy J Gordon, 'Authors, Publishers, And Public Goods - Trading Gold For Dross' (2002) 36 *Loy L A L Rev* 159, 178-187 (discussing the issue of retrospective application and incentive in the CTEA). In particular, Paul Heald has shown that once the incentive to create is assured, any extension of the property right beyond that point should at least require affirmative proof that the market is incapable of responding efficiently to consumer demand, which can hardly be given. In contrast, data show a highly competitive and robust market for the production of public domain books, especially when production costs are low, whereas data do not show any off-setting social benefits in the form of increased availability attributable to copyright status. Paul J Heald, 'Property Rights and the Efficient Exploitation of Copyrighted Works: An Empirical Analysis of Public Domain and Copyrighted Fiction Best Sellers' in Fiona Macmillan (ed), *New Directions in Copyright Law: Volume 6* (Edward Elgar Publishing 2007) 78-91.

⁴⁰³ See Neil W. Netanel, 'Why Has Copyright Expanded: Analysis and Critique' in Fiona Macmillan (ed), 6 *New Directions In Copyright Law* (Edward Elgar 2008) 16 <<http://ssrn.com/abstract=1066241>> accessed 3 May 2013 (noting that 'as we have moved to an economy in which information and communication is a highly valued resource, a broad array of expanding intellectual property rights have colonised uses and subject matter that were previously public domain'). Another additional dimension of the process of copyright expansion may be seen in the abolition of formalities that made copyright protection the default rule of creativity and access rights or the public domain the exception, in contrast to the traditional arrangement that was previously in place. See Berne Convention for the Protection of Literary and Artistic Works (adopted 9 September 1886, last revised in Paris July 24, 1971 and amended 28 September 1978) 1161 UNTS 30 (Berne Convention) art 5(2). See also Stef van Gompel, 'Copyright Formalities and the Reasons for their Decline in Nineteenth Century Europe' in Ronan Deazley, Martin Kretschmer and Lionel Bently (eds), *Privilege and Property. Essays on the History of Copyright* 6 (Open Book Publishers 2010) 137-15; Delia Lipszyc, 'Historical Appearances and Disappearances of Formalities: from Berne to National Laws' in Lionel Bently, Uma Suthersanen and Paul Torremans (eds), *Global Copyright: Three Hundred Years Since the Statute of Anne, from 1709 to Cyberspace* (Edward Elgar 2010) 367-394; Jane C Ginsburg, 'The US Experience with Formalities: a Love/Hate Relationship' in Lionel Bently, Uma Suthersanen and Paul Torremans (eds), *Global Copyright: Three Hundred Years Since the Statute of Anne, from 1709 to Cyberspace* (Edward Elgar 2010) 425-459 (discussing the history of formalities in the United States).

⁴⁰⁴ See, for example, Estelle Derclaye, *The Legal Protection of Databases: A Comparative Analysis* (Edward Elgar Publishing 2008); Mark Davison, 'Database Protection: The Commodification of Information' in Lucie Guibault

strong commercial distribution rights, especially the right to control imports and rental rights,⁴⁰⁵ and the strengthening of the right to make derivative works.⁴⁰⁶

2.1.2 Fair Dealings, Digital and Contractual Locks

Again, access rights have been eroded by narrowing the scope of fair dealing or fair use rights, exceptions and limitations to copyright and public interest rights.⁴⁰⁷ Although the erosion of fair dealing rights appeared early in the history of copyright⁴⁰⁸ – and has thrived on the increasing confusion regarding the scope of fair dealing rights which has made users reluctant to rely on them⁴⁰⁹ – it has recently reached its peak with the transition from the analogue to the digital medium. In particular, the enactment of anti-circumvention provisions as a response to the Internet threat played a decisive role in the process of contraction of fair dealing rights. As literature explained, digital networks may equally serve openness and perfect control.⁴¹⁰ The initial open nature of the Internet has been gradually substituted by architectures of greater and greater control. Technology has been able to appropriate and fence informational value, which was previously unowned and unprotected, through the adoption of technological protection measures (TPMs) or digital rights management (DRM) systems to control access and use of creative works in the digital

and P Brent Hugenoltz (eds), *The Future of the Public Domain: Identifying the Commons In Information Law* 167-189 (Kluwer Law International 2006).

⁴⁰⁵ See Fiona Macmillan, 'Commodification and Cultural Ownership' in Jonathan Griffiths and Uma Suthersanen (eds), *Copyright And Free Speech: Comparative And International Analyses* (OUP 2003) 43 (mentioning Artt. 11 and 14(4) of the TRIPs Agreement, which include rental rights in relation to computer programs, films and phonograms, Art. 7 of the WIPO Copyright Treaty 1996 and Artt. 9 and 13 of the WIPO Performances and Phonograms Treaty 1996).

⁴⁰⁶ It is also worth noting that, in recent times, Free Trade Agreements (FTAs), which are negotiated between individual countries, have extended copyright protection beyond the minimum standards provided by international agreements. Often, FTAs between powerful and less powerful nations include even more restrictive provisions than those existing in the domestic legislation of powerful countries.

⁴⁰⁷ See Fiona Macmillan, 'Public Interest and the Public Domain in an Era of Corporate Dominance' in Brigitte Andersen (ed), *Intellectual Property Rights: Innovation, Governance And The Institutional Environment* 48 (Edward Elgar Publishing 2006) (noting 'a significant shift in rhetoric', because 'not only have the monopoly privileges of intellectual property owners become "rights", user rights have become "defences" or "exceptions"'). A reduction in the scope of exception has also been recently revamped by decisions like Infopaq by the European Court of Justice implementing a principle of strict interpretation of exceptions. See Case C-5/08, Infopaq International A/S v Danske Dagblades Forening, 2009 E.C.R. I-06569 (July 16, 2009), at § 20, 26, 48, available at <http://curia.europa.eu/juris/liste.jsf?language=en&jur=C,T,F&num=C-5/08&td=ALL>.

⁴⁰⁸ See Lionel Bently, 'Copyright and the Death of the Author in Literature and Law' (1994) 57 *Modern L Rev* 973, 979.

⁴⁰⁹ See Macmillan, 'Public Interest and the Public Domain' (n 409) 62-63.

⁴¹⁰ See Lawrence Lessig, *The Code and Other Laws of Cyberspace* (Basic Books 1999) 3-60; Joel Reidenberg, 'Lex Informatica: The Formulation of Information Policy Rules Through Technology' (1998) 76 *Texas L Rev* 553; William J Mitchell, *City of Bits: Space, Place, and the Infobahn* 111 (MIT Press 1995). See also Lawrence Lessig, *Code Version 2.0* (Basic Books 2006).

environment. TPMs actually served as a tool to turn information into perfect commodities.⁴¹¹ However, it was finally a mix of technology and legislation that empowered the modern drift towards commodification of information and substantially restricted users' access rights and fair dealings. Under the framework initially set by the WIPO Internet Treaties,⁴¹² the Digital Millennium Copyright Act in the United States⁴¹³ and the Information Society Directive in Europe⁴¹⁴ enacted provisions aimed at forbidding the circumvention of copyright protection systems. In addition, the law banned any technology potentially designed to circumvent technological anti-copy protection measures.⁴¹⁵ Consistent literature has highlighted the fact that the enactment of these provisions upset the delicate balance between copyright protection and access rights by bypassing those exceptions to copyright that allow privileged uses.⁴¹⁶ In theory, both European and United States legislation mandate appropriate measures to protect fair use, fair dealing rights, limitations and exceptions. In Europe, the Information Society Directive provides that 'Member States shall take appropriate measures to ensure that rightholders make available to the beneficiary of an exception or limitation provided for in national law [. . .] the means of benefiting from that exception or limitation, to the extent necessary to benefit from that exception or limitation and where that beneficiary has legal access to the protected work or subject-matter

⁴¹¹ See Kamiel J Koelman, 'The Public Domain Commodified: Technological Measures and Productive Information Use' in Lucie Guibault and P. Brent Hugenoltz (eds), *The Future of the Public Domain: Identifying the Commons In Information Law* (Kluwer Law International 2006) 108-110; Elkin-Koren, 'It's All About Control' (n 63) 83-84;

⁴¹² See WIPO Copyright Treaty (adopted 20 December 1996, entered into force 6 March 2002) WO 033 EN (WCT) art 11 <http://www.wipo.int/treaties/en/ip/wct/trtdocs_wo033.html#P87_12240> accessed 13 June 2013.

⁴¹³ See Digital Millennium Copyright Act of 1998, Pub L No 105-304 § 103, 17 USCA § 1201 (a) (1) (A) (West 2008) (DMCA) <<http://www.copyright.gov/legislation/pl105-304.pdf>> accessed 13 June 2012.

⁴¹⁴ See Council Directive (EC) 2001/29 on the harmonisation of certain aspects of copyright and related rights in the information society [2001] OJ L167/10 Art. 6(1) <<http://eur-lex.europa.eu/LexUriSe rv/LexUriServ.do?uri=OJ:L:2001:167:0010:0019:EN:PDF>> accessed 13 June 2013.

⁴¹⁵ Ibid art 6 (2); DMCA (n 413) § 1201 (a) (2) and (b).

⁴¹⁶ See, among a very large amount of literature on the question, Boyle, *The Public Domain* (n 56) 83-85; Jerome H Reichman, Graeme B Dinwoodie and Pamela Samuelson, 'A Reverse Notice and Takedown Regime to Enable Public Interest Uses of Technically Protected Copyrighted Works' (2007) 22 Berkeley Tech L J 982; Lucie Guibault and others, 'Study on the Implementation and Effect in Member States' Laws of Directive 2001/29/EC on the Harmonisation of Certain Aspects of Copyright and Related Rights in the Information Society' (European Commission DG Internal Market, ETD/2005/IM/D1/91, February 2007) 102-133 <http://www.ivir.nl/publications/guibault/Infosoc_report_2007.pdf> accessed 1 July 2013; Tom Gillespie, *Wired Shut: Copyright and the Shape of Digital Culture* (MIT Press 2007); Christopher May, *Digital Rights Management: the Problem of Expanding Ownership Rights* (Chandos 2007); Nicola Lucchi, *Digital Media and Intellectual Property* (Springer 2006); Dan Penny and Rebecca Cliffe, *DRM: Still a Balancing Act?* (Electronic Publishing Services Ltd 2006); Nora Braun, 'The Interface Between The Protection of Technological Measures and the Exercise of Exceptions to Copyright and Related Rights: Comparing the Situation in the United States and the European Community' (2003) 25 EIPR 496, 499.

concerned.⁴¹⁷ The United States DMCA takes a different approach and provides for a list of statutory exemptions, including an exemption for nonprofit libraries, archives, and educational institutions, for law enforcement, intelligence, and other government activities, for reverse engineering, and for encryption research.⁴¹⁸ This list is also accompanied by a set of administratively created exemptions which are updated at regular intervals by the Library of Congress to cater for technological advancement.⁴¹⁹ However, as the law stands, if those measures provided under EU law are not in place or the circumvention is not covered by any of the specific acts listed under US law, circumventing a digital right management technology that restricts acts permitted by the law is a civil wrong, and perhaps a crime, as such.⁴²⁰ For this reason, TPMs are viewed by librarians and users as a means of restricting access to academic publications.⁴²¹

In recent years, contracts and private ordering have also been deployed, together with technology and anti-circumvention provisions, to commodify and appropriate information.⁴²² The result of the synergy between technology, contracts and supporting legal provisions is what Julie Cohen has called a 'pervasively distributed copyright enforcement' that has been implemented as a crisis management tool in the marketplace for digital content to protect established business models.⁴²³ Contracts may be employed to restrict or prohibit uses of works that would otherwise be permitted under copyright law. Current mass-market licensing practices increasingly tend to restrict or prohibit certain uses of works

⁴¹⁷ See Directive 2001/29/EC (n 414) art 6 (4).

⁴¹⁸ See DMCA (n 413) § 1201.

⁴¹⁹ Ibid § 1201 (a)(1)(C).

⁴²⁰ See Council Common Position 48/2000 of 28 September 2000 with a view to adopting a Directive of the European Parliament and of the Council on the harmonisation of certain aspects of copyright and related rights in the information society, [2000] OJ C344/1 <<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2000:344:0001:0022:EN:PDF>> accessed 13 June 2013. See also Guibault and others, 'Study on the Implementation and Effect in Member States' Laws of Directive 2001/29/EC' (n 416) 106.

⁴²¹ See Charles Oppenheim, 'Electronic Scholarly Publishing and Open Access' (n 220) 583-584. See also Jason Puckett Digital Rights Management as Information Access Barrier' (2010) 34/35 Progressive Librarian 11, 11-24 <http://www.progressivelibrariansguild.org/PL_Jnl/pdf/PL34_35_fallwinter2010.pdf> accessed 13 June 2013.

⁴²² See Lucie Guibault, 'Wrapping Information in Contract: How Does it Affect the Public Domain?' in Lucie Guibault and P Bernt Hugenholtz (eds), *The Future of the Public Domain: Identifying the Commons In Information Law* (Kluwer Law International 2006) 87-104. See also Martin Kretschmer, Estelle Derclaye, Marcella Favale, Richard Watt, 'The Relationship Between Copyright and Contract Law' (Intellectual Property Office 2012); Lucie Guibault, *Copyright Limitations and Contracts: An Analysis of the Contractual Overridability of Limitations on Copyright* (Kluwer Law International 2002); Loren Lydia Pallas, 'Slaying the Leather-Winged Demons in the Night: Reforming Copyright Owner Contracting with Clickwrap Misuse' (2004) 30 Ohio N U L Rev 495; P Bernt Hugenholtz, 'Copyright, Contract and Code: What Will Remain of the Public Domain?' (2000) 26 Brook J Int'l L 77; Reichman and Franklin, 'Privately-Legislated Intellectual Property Rights' (n 396); Niva Elkin-Koren, 'Copyright Policy and the Limits of Freedom of Contract' (1997) 12 Berkeley Tech L J 93.

⁴²³ See Julie Cohen, 'Pervasively Distributed Copyright Enforcement' (2006) 95 Geo L J 1. See also Boyle, *The Public Domain* (n 56) 83-85.

over the Internet far beyond the exclusive rights granted by copyright law. The digital information marketplace has seen the emergence of standard form contracts restricting the capacity to use information not or no longer qualifying for intellectual property protection or whose use is privileged. Click-wrap agreements may imply that restrictions on the use of online content is extended to unprotected material or may prohibit any reproduction of the content for any purpose whatsoever.⁴²⁴ The most powerful example of these forms of technological and contractual enclosure is that of click-wrap agreements that state that some uses of a scanned public domain material are restricted or prohibited.⁴²⁵ As a reaction to these practices, OA for public domain materials has been strongly advocated in several different venues, with specific emphasis on libraries' re-use policy of digitised public domain heritage material.⁴²⁶ In this respect, the Berlin Declaration on OA has encouraged 'the holders of cultural heritage to support open access by providing their resources on the Internet'⁴²⁷ In a similar fashion, but with more prescriptive effects, the European Commission has issued a Recommendation stating that 'cultural institutions should make public domain material digitised with public funding as widely available as possible for access and re-use'.⁴²⁸ Again, the handshake between technological and contractual enclosure has especially negative effects on academic library users. As David Hansen discusses, in electronic licence agreements between publishers and libraries, the default rules for

⁴²⁴ Lucie Guibault, 'Evaluating Directive 2001/29/EC in the light of the Digital Public Domain' (1st COMMUNIA Conference, 1 July 2008) 13.

⁴²⁵ As an example, if you download any public domain books from the Google books website – a project to partner with international libraries to digitise public domain materials – the Usage Guidelines included at the front of each scan read as follows: 'We also ask that you: + Make non-commercial use of the files. We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.' In the preamble to the Usage Guidelines Google justifies these restrictions by stating that the digitisation work carried out by Google 'is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties.'

⁴²⁶ See Bas Savenije and Annemarie Beunen, 'Cultural Heritage and the Public Domain' (2012) 22 *Liber Quarterly* <<http://liber.library.uu.nl/index.php/lq/article/view/8089/8470>> accessed 10 March 2013.

⁴²⁷ See 'Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities' (Berlin Conference, Berlin, 20-22 October 2003) <<http://oa.mpg.de/lang/en-uk/berlin-prozess/berliner-erklarung>> accessed 16 January 2013.

⁴²⁸ Commission Recommendation 2011/711/EU of 29 October 2011 on the digitisation and online accessibility of cultural material and digital preservation [2011] OJ L283/39 <<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:283:0039:0045:EN:PDF>> accessed 10 March 2013. See also 'The Public Domain Manifesto' (COMMUNIA 2010) Recommendation 7 <<http://www.publicdomainmanifesto.org/manifesto>> accessed 13 June 2013; Giancarlo Frosio, 'COMMUNIA Final Report on the Digital Public Domain' (Report prepared for the European Commission on behalf of the COMMUNIA Network and the Nexa Center for Internet and Society, 2012) 154 <<http://communia-project.eu/final-report>> accessed 13 June 2013;.

accessing copyrighted content are often altered and academic library users are deprived of basic fair dealing and fair use rights.⁴²⁹

2.2 COPYRIGHT AND SCHOLARLY PUBLISHING

As history has highlighted, from the ancient proverbial idea of *scientia donum dei est unde vendi non potest* to the emergence of the notion of ‘open science’, the normative structure of science presents an unresolvable tension with the exclusive and monopolistic structure of intellectual property entitlements. Merton has strongly emphasised the contrast between the ethos of science and intellectual property monopoly rights:

The substantive findings of science are a product of social collaboration and are assigned to the community. They constitute a common heritage in which the equity of the individual producer is severely limited. An eponymous law or theory does not enter into the exclusive possession of the discoverer and heirs, nor do the mores bestow upon them special rights of use and disposition. *Property rights in science are whittled down to the bare minimum by the rationale of the scientific ethic.* Scientists claim to ‘their’ intellectual ‘property’ are limited to those of recognition and esteem which, if the institution functions with a modicum of efficiency, are roughly commensurate with the significance of the increments brought to the common fund of knowledge.⁴³⁰

Once scholars sign away their copyright, through contracts which are usually imposed unilaterally by academic publishers, the ‘rationale of scientific ethic’ to which Merton refers is inevitably undermined. In this respect, the conflict between the traditional copyright rationale and the rationale of scientific ethic is unresolvable. This tension becomes increasingly unsustainable because of the overexpansion of copyright entitlements and the monopolistic effects that it brings about, especially in terms of price increases, price discrimination and deadweight loss, which jeopardise global access to knowledge. Summing up the conundrum presented in the previous pages, Jerome Reichman and Ruth Okediji have recently clearly described the inherent collision between copyright law and science.⁴³¹ Access to, and use of, the cumulative scientific literature and data are frustrated by weak

⁴²⁹ David R Hansen, ‘A State Law Approach to Preserving Fair Use in Academic Libraries’ (2011) 22 Fordham Intell Prop Media & Ent LJ 1

⁴³⁰ Robert K Merton, ‘The Normative Structure of Science’ in *The Sociology of Science: Theoretical and Empirical Investigations* (U Chicago Press 1979) (1942) as cited in Armbruster, ‘Open Access in Social and Cultural Science’ (n 278) 428 (emphasis added).

⁴³¹ See Jerome H Reichman and Ruth Okediji, ‘When Copyright Law and Science Collide: Empowering Digitally Integrated Research Methods on a Global Scale’ (2012) 96 (4) Minnesota L Rev 1362; Minnesota Legal Studies Research Paper 12-54 <<http://ssrn.com/abstract=2149218>> accessed 13 June 2013. See also Christophe Geiger,

limitations and exceptions, fair dealings and fair use rights that should defend scientific research.⁴³² The ‘coup de grâce’ to scientific users’ rights, as Reichman and Okediji refer to it, was finally given by digital locks and database protection laws.⁴³³ As Rufus Pollock has noted, the current paradigm ‘binds us to a narrow and erroneous viewpoint in which innovation is central but access is peripheral.’⁴³⁴ This narrow viewpoint and the intellectual property rhetoric have hidden the costs of extreme propertisation and restriction of access. In fact, today, those marginal social costs are rising as a consequence of the increase in value that the greater capacity of dissemination of the digital networked society produces over open access to information.⁴³⁵ In this respect, authors have been arguing repeatedly that an outmoded copyright system may be crippling ‘potentially boundless scientific opportunities in the digital environment’.⁴³⁶ The opportunities offered by technological innovation and disintermediated networked circulation of information have heightened the protection/access tension by increasing the social loss of public value that strong proprietarian approaches to academic knowledge may produce.

2.2.1 Copyright Rationale in Academic Publishing

The traditional copyright incentive theory may be subject to an extremely peculiar construction, and partly lose its strength, when applied to academic works and academic publishing. The relevance of motivational arguments, as opposed to economic, for justifying a recalibration of the scope of copyright protection is especially strong in the academic field. As Müller-Langer and Scheufen have noted, ‘copyright seems negligible in academia as researchers are motivated by reputation gains and CV effects rather than direct financial returns from publishing their works’.⁴³⁷ Steven Shavell reinforces the same point by noting

‘Copyright and Free Access to Information for a Fair Balance of Interests in a Globalised World’ (2006) 28 EIPR 366.

⁴³² Ibid 1372-1388.

⁴³³ Ibid 1414-1424.

⁴³⁴ Rufus Pollock, *The Value of the Public Domain* 4 (UK Institute for Public Policy Research 2006).

⁴³⁵ See Paul A David and Jared Rubin, ‘Restricting Access to Books on the Internet Some Unanticipated Effects of U.S. Copyright Legislation’ (2008) 5 *Rev Econ Res Copyright Issues* 23, 50 (‘Today, the greater capacity for the dissemination of knowledge, for cultural creativity and for scientific research carried out by means of the enhanced facilities of computer-mediated telecommunication networks, has greatly raised the marginal social losses that are attributable to the restrictions that those adjustments in the copyright law have placed upon the domain of information search and exploitation’).

⁴³⁶ Reichman and Okediji, ‘When Copyright Law and Science Collide’ (n 431) 1365.

⁴³⁷ Frank Müller-Langer and Marc Scheufen, ‘Academic Publishing and Open Access’ (2013) Max Planck Institute for Intellectual Property & Competition Law Research Paper 13-03 <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2198400> accessed 16 March 2013 (showing that copyright may be both a blessing and a curse in establishing an effective framework for scientific progress).

[t]he conventional rationale for copyright of written works, that copyright is needed to foster their creation, is seemingly of limited applicability to the academic domain. For in a world without copyright of academic writing, academics would still benefit from publishing in the major way that they do now, namely, from gaining scholarly esteem.⁴³⁸

The incentive for scientific authors to publish is reputational rather than economic, only bringing indirectly to successful authors economic and social gains through scholarly esteem and professional advancement.⁴³⁹ Although caveats should be made in connection with some types of research outputs, such as textbooks,⁴⁴⁰ in scientific research and academic publishing, in contrast to other creative industries, motivational factors like reputation or social recognition are likely to be behind creative endeavours rather than financial gains.⁴⁴¹ As Hilty stressed, for-profit publishers inevitably tend to impose greater restrictions on scientific publications than the scientific community would find acceptable, because the goals of commercial publishers and the community are different, perhaps even opposing. In actual fact, academic authors receive motivation through reputational benefits that are increased by the widest dissemination of their works, rather than from monetary profit from the sale of publications or subscriptions, as is the case for commercial publishers.⁴⁴² In fact, ever since the first scientific journals were founded in the seventeenth century, journals have not paid authors for articles. In the academic publishing market, royalties are in most cases absent or negligible, and there is no empirical evidence that copyright increases the

⁴³⁸ Steven Shavell, 'Should Copyright of Academic Works Be Abolished?' (2010) 2 J. Legal Analysis 301, 301.

⁴³⁹ See Roberto Caso, 'Scientific Knowledge Unchained: Verso una Policy dell'Università Italiana sull'Open Access' (2013) The Trento Law and Technology Research Group Research Papers Series 16, at 6 <<http://eprints.biblio.unitn.it/4155>> accessed 13 June 2013; Reichman and Okediji, 'When Copyright Law and Science Collide' (n 431) 1427-1428; Shavell, 'Should Copyright of Academic Works Be Abolished?' (n 438) 302; Charlotte Waelde, 'From Entertainment to Education: the Scope of Copyright?' (2004) 3 IPQ 259; Karen A Jordan, 'Financial Conflicts of Interest in Human Subjects Research: Proposals for a More Effective Regulatory Scheme' (2003) 60 Wash & Lee L Rev 15, 92-94.

⁴⁴⁰ Distinctions between motivational incentive – economic or reputational – for different academic research outputs have rarely been reviewed by the literature. Textbooks, for example, may be far more lucrative in terms of royalties than other publications, such as articles or monographs. A case could be made that the primary motivation for textbooks may be economic rather than reputational, although this may be debatable. In any event, a more nuanced consideration of different types of academic publications and how OA should apply to them seems to be a concern worth considering.

⁴⁴¹ See Paula E Stephan, 'The Economics of Science' (1996) 34(3) Journal of Economic Literature 1199, 1199-1235; Dasgupta Partha and Paul A David, 'Toward a New Economics of Science' (1994) 23(4) Research Policy 487. Cf Paula E Stephan, *How Economics Shapes Science* (Harvard U Press 2012).

⁴⁴² See Reto Hilty, 'Five Lessons About Copyright in the Information Society: Reaction of the Scientific Community to Over-Protection and What Policy Makers Should Learn' (2006) 53 J Copyright Soc'y USA 103, 109-18.

creators' earnings.⁴⁴³ In this respect, Suber noted that '[t]he royalty-free nature of journal articles also explains why scholars would not be hurt if copyright law were dramatically reformed to restore balance between copyright holders and users'.⁴⁴⁴

Again, the doubtful applicability of the traditional copyright incentive theory to academic authors is confirmed by the fact that the large majority of research is publicly funded.⁴⁴⁵ Therefore, the public or taxpayer's money serves to support the creation of the scientific publications in the first place. However, the public must pay a second time to access that very same research it has already paid for through the fees that research institutions and libraries pay to commercial scientific publishers.⁴⁴⁶ In this regard, the Max Planck Institute has noted that

[s]ince both the production as well as the acquisition of scholarly contents is for the most part publicly financed, there is a legitimate public interest in a highly efficient and cost-effective publication process. Taxpayers in Europe need to be guaranteed that the relevant funds are not used to subsidise excessive profit margins of some commercial publishers, whose business models are based on the commodification of scientific information or knowledge.⁴⁴⁷

Finally, we will return later, in Section 3.1, to an additional special feature of the academic publishing market, which has been characterised as a two-sided market, where the scientific community provides both the supply and the demand for scientific research. For now, let us note that, in light of this aspect of the academic publishing market, a stronger argument than in other publishing markets may be put forward to sustain openness. In fact, academic authors may be willing to surrender the small royalties they receive in exchange for unrestricted, easy and fast access to the global library of academic research, which is critical for their capacity to produce follow-on innovation and research.

2.2.2 Ownership of Rights in Academic Publishing

Ownership of rights in academic research – and the associated question of ownership of rights to open access to academic works – is a preliminary issue that is worth mentioning briefly. As highlighted by the literature, the question of ownership, namely whether it

⁴⁴³ See Ruth Towse, *Creativity, Incentive and Reward: An Economic Analysis of Copyright and Culture in the Information Age* (Cheltenham 2001); Tenopir and King, *Towards Electronic Journals* (n 177).

⁴⁴⁴ Peter Suber, 'Creating an Intellectual Commons through Open Access' (n 90) 176.

⁴⁴⁵ See Reichman and Okediji, 'When Copyright Law and Science Collide' (n 431) 1426-1427; Willinsky, *The Access Principle* (n 3) 2; Samuel E. Trosow, 'Copyright Protection for Federally Funded Research: Necessary Incentive or Double Subsidy?' (2005) 22 *Cardozo Arts & Ent LJ* 613.

⁴⁴⁶ See Reichman and Okediji, 'When Copyright Law and Science Collide' (n 431) 1426-1427.

⁴⁴⁷ Hilty and others, 'European Commission: Green Paper: Copyright in the Knowledge Economy' (n 511) 313.

resides with the academic authors or the research institution, still presents controversial aspects, especially due to lack of harmonisation. In Europe, the initial ownership of rights is determined by the law of each Member State, where the national rules may point to the authors themselves or the research institutions employing them, under the traditional ‘work for hire’ doctrine.⁴⁴⁸ Lucie Guibault, for example, has reviewed legal arrangements in France, the Netherlands and the United Kingdom to determine whether research carried out by scientists or scholars in a university is to be qualified as an employee creation.⁴⁴⁹ In all these countries, although the law might designate, quite unambiguously apart from the case of France, the university as the initial copyright owner of works created in the course of research activities within a university setting,⁴⁵⁰ relevant customs and practices in fact assign initial ownership to the individual academic author.⁴⁵¹ In particular, in the United Kingdom, although a traditional ‘work for hire’ provision is included in Section 11(2) of the Copyright, Design And Patent Act 1988,⁴⁵² building upon a dictum of Lord Evershed,⁴⁵³ Cornish concludes that works of academics employed in an environment devoid of commercial interests should give rise to copyrights initially belonging to the author, rather than the academic institution.⁴⁵⁴ Documents and internal policies published by Cambridge University and the University of Oxford seem to confirm the continued application of this rule.⁴⁵⁵ Concluding on the matter of initial ownership, Guibault noted that in practice, in the jurisdictions that she has reviewed, the individual academic authors seem to enjoy a consistent degree of freedom in the exercise of the copyright on their works, ‘especially in view of the rather vague university policies existing on the subject’ and ‘therefore, whether

⁴⁴⁸ See Lucie Guibault, ‘Owning the Right to Open Up Access to Scientific Publications’ in Guibault and Angelopoulos (eds), *Open Content Licensing from Theory to Practice* (Amsterdam U Press 2011).

⁴⁴⁹ Ibid 140-148.

⁴⁵⁰ See Intellectual Property Code, art L 131-3-1 (France); Copyright Act, art 7 (Netherlands). See also Guibault, ‘Owning the Right to Open Up Access to Scientific Publications’ (n 448) 141-143 (especially for a discussion of the applicability of ‘work for hire’ to the scientific personnel of French universities and research institutes)

⁴⁵¹ See Guibault, ‘Owning the Right to Open Up Access to Scientific Publications’ (n 448) 148.

⁴⁵² See Copyright, Design And Patent Act 1988, s 11(2) (stating that ‘[w]here a literary, dramatic, musical or artistic work or, a film, is made by an employee in the course of his employment, his employer is the first owner of any copyright in the work subject to any agreement to the contrary’).

⁴⁵³ See *Stephenson Jordan v McDonald & Evans* [1951] 69 RPC 10, 22 (noting that it would be ‘inconceivable’ that the lectures of a great scholar, in that case F W Maitland, would belong to anyone other than himself, even though he was employed by a university).

⁴⁵⁴ See William R Cornish, ‘Works Made in Employment: the UK Position’ in Gerard Mom and Petra J Keuchenius (eds), *Het werkgeversauteursrecht, Stichting Auteursrechtmanifestaties* (Kluwer 1992) 32.

⁴⁵⁵ See University of Cambridge, ‘Report of the Joint Working Party on Copyright: Notice’ (Cambridge University Reporter, No 5858, 15 October 2001) § 4.1.1 <www.admin.cam.ac.uk/reporter/2001-02/weekly/5858/20.html> accessed 13 June 2013; University of Cambridge, ‘University’s Statutes and Ordinances, Chapter XIII, Finance and Property’ s 2(7) <<http://www.admin.cam.ac.uk/univ/so/2011/chapter13-section2.html>> accessed 13 June 2013; University of Oxford, ‘Statute XVI: Property, Contracts, and Trusts’ s 5-7 <www.admin.ox.ac.uk/statutes/790-121.shtml#_Toc28143157> accessed 13 June 2013.

to publish [their] research results under open access terms or not will be the author's own decision'.⁴⁵⁶

Robert Denicola has discussed ownership of rights, and OAP in the United States.⁴⁵⁷ Similarly to the arrangements that we have seen in place in some European countries, Denicola believes that a literal application of case law in the United States⁴⁵⁸ yields a strong case for university ownership of copyright in academic research under the 'work for hire' rules, although 'by tradition schools and universities have acquiesced in faculty ownership'.⁴⁵⁹ In contrast to the traditional academic ownership of rights in the United States, Denicola makes a controversial proposal. He suggests that universities should exercise their legal right to claim ownership of copyright in the research outputs produced by their faculties, because only universities can yield sufficient leverage power against academic publishers to promote fundamental change in scholarly publishing.

2.2.3 Transfer of Rights in Academic Publishing

Regardless of the ownership of rights, the owner is usually required to transfer her rights to a publisher to enjoy publication. In fact, transfer of rights is an additional element that has a very peculiar characterisation in academic publishing. In order to enhance reputational value, scientific authors surrender their copyright for free, rather than selling it, to scientific publishers traditionally positioned in the market, whose publications enjoy high impact factors.⁴⁶⁰ In light of these considerations of prestige, as Guibault noted, room for negotiation with respect to the terms of the contract is almost non-existent and academic authors have to face the widespread practice where terms are presented on a 'take-it-or-leave-it' basis.⁴⁶¹ Additionally, similarly to the rules relating to initial ownership, those on

⁴⁵⁶ See Guibault, 'Owning the Right to Open Up Access to Scientific Publications' (n 448) 148.

⁴⁵⁷ Robert C Denicola, 'Copyright and Open Access: Reconsidering University Ownership of Faculty Research' (2006) 85 Neb L Rev 351. See also Alissa Centivany, 'Paper Tigers Rethinking the Relationship Between Copyright and Scholarly Publishing' (2011) 17 Mich. Telecomm Tech L Rev 385, 389-408 (arguing that despite customary practice and common misunderstanding, universities in fact own the copyrights in faculty-created works under the work-for-hire doctrine); Eric Priest, 'Copyright and The Harvard Open Access Mandate' (2012) 10 Nw. J. Tech. & Intell. Prop. 377, 398-430 (arguing also that permission mandates can create legally enforceable, durable nonexclusive licenses).

⁴⁵⁸ See *Community for Creative Non-Violence v. Reid*, 490 U.S. 730 (1989).

⁴⁵⁹ Denicola, 'Copyright and Open Access' (n 457) 373.

⁴⁶⁰ See Caso, 'Scientific Knowledge Unchained' (n 439) 7-9; in fact, the authors benefit from the peer review mechanisms that these publishers manage and are reluctant to publish outside the well-established or high impact outlets. See Reichman and Okediji, 'When Copyright Law and Science Collide' (n 431) 1460

⁴⁶¹ See Guibault, 'Owning the Right to Open Up Access to Scientific Publications' (n 448) 150. See also, on journal publication agreements and open access in the legal field in the United States, Michael N Widener, 'Safeguarding "The Precious": Counsel on Law Journal Publication Agreements in Digital Times' (2010) 28 J

authors' contracts do not enjoy harmonisation at European level, leaving the authors at the mercy of the Member State legislation, which only in some instances may have certain protective measures in place for the benefit of the authors. In fact, according to Guibault's review of some European jurisdictions, only in France may the typical broad transfer of rights requested by academic publishers face challenges of validity, whereas 'courts in the UK and the Netherlands would probably uphold the validity of such [clauses]'.⁴⁶²

Given these market and contractual conditions, academic publishers, which are either commercial entities, learned societies or other non-profit entities, are usually broadly empowered to determine the conditions of access to, and reuse of, scientific authors' research outputs. Once scientists and scholars sign away the copyright to publishers, publishers may use exclusive copyright to levy subscription fees, site licences and pay-per-view charges.⁴⁶³ The effect of publishers' copyright exclusivity on academic knowledge is two-fold. On the one hand, scholars are prevented from distributing, copying and making transformative uses of their research outputs without publishers' permission; on the other hand the publishers may sell scholars' works back to the academic community itself, including libraries, researchers and students, at monopoly prices.⁴⁶⁴ Obviously, the traditional academic publishing arrangements regarding transfer of rights may potentially squash any type of OAP by the authors. Although, in some circumstances, as we will discuss later, academic publishers may authorise the pre-print to be made available green OA through an institutional repository or the authors' website, often publishers only authorise the OAP of an abstract and will demand the removal of any other version of the article from OA availability.⁴⁶⁵

2.2.4 Open Access and Licensing

There are two legal foundations for OAP: public domain and copyright-holder consent.⁴⁶⁶ If the copyright still resides with the academic author or institution, depending on initial ownership of rights, few issues arise and OAP can be permitted according to the desire of the original owner. However, in the traditional academic publishing scenario that we have described above, rights have been fully transferred to the publishers, whose permission

Marshall J Computer & Info L 217; Benjamin J. Keele, 'Copyright Provisions in Law Journal Publication Agreements' (2010) 102 Law Libr. J. 269.

⁴⁶² Ibid 151.

⁴⁶³ See Armbruster, 'Open Access in Social and Cultural Science' (n 278) 428.

⁴⁶⁴ Ibid 429. See also Guibault, 'Owning the Right to Open Up Access to Scientific Publications' (n 448) 148 (noting that, although the arrangements vary depending on the field of science, access restrictions may prevent academic authors from distributing their own works, even to colleagues and students, or reusing content, figures and tables from their own articles).

⁴⁶⁵ See Guibault, 'Owning the Right to Open Up Access to Scientific Publications' (n 448) 149-150.

must be obtained by the original author for any OAP of the published research output, including any alternative versions or even pre-prints.

Among the key licensing issues that soon emerged for OA publications was to define the extent of permissible self-archiving. Early in the history of OAP, recognising that the desire of authors to self-archive seemed unlikely to hurt subscriptions, a right to do so was included by the publishers within the copyright transfer policies that authors were asked to sign.⁴⁶⁷ In recent years, almost all publishers have clearly spelled out what is permissible or not in terms of posting of self-archived copies.⁴⁶⁸ According to Björk, '[a] majority of publishers nowadays allow posting of the author's accepted manuscript in an IR, sometimes with an embargo period' and '[t]he general trend seems to be to allow posting only on home pages and in institutional repositories, perhaps since these are perceived as less of a threat compared to subject repositories'.⁴⁶⁹ In this regard, RoMEO – which has been launched as part of SHERPA Services based at the University of Nottingham as a directory of journal policies on author self-archiving – reports that 69 per cent of the nearly 1,300 publishers registered in the RoMEO database, including all the principal publishers and the core ISI journals, have formally allowed some form of author self-archiving.⁴⁷⁰ Again, Mikael Laakso has been running an ongoing study of the copyright policies of the 100 largest publishers with journals indexed in Scopus, representing a total volume of 1.15 million yearly articles. Laakso's research has found that immediate self-archival of the accepted version was allowed for 62 per cent of the articles on home pages, 61 per cent in institutional repositories, but only 21 per cent in subject repositories.⁴⁷¹ If journals allowing uploading

⁴⁶⁶ See Peter Suber, 'Creating an Intellectual Commons through Open Access' (n 90) 179.

⁴⁶⁷ See John Willinsky, 'The Stratified Economics of Open Access' (2009) 39(1) *Economics Analysis and Policy* 59-60. See also Goodman, 'The Criteria for Open Access' (n 220) 260 (noting that most publishers permit the author to post the submitted manuscript or preprint in repositories, although some journals, especially medical journals, which have had a long standing rule against pre-publication disclosure, do not permit any form of preprint publication; in contrast, publishers tend not to allow the self-archiving of post prints, whereas more frequently explicitly permit the posting of the author's approved peer-reviewed manuscript); Sally Morris, 'Open publishing' (2003) 16(3) *Learned Publishing* 171, 171-172 (discussing preprints and post prints and noting that while there is no real concern by the publishers that the availability of preprints may seriously undermine journals' viability, posting the final published version may be another matter and the reaction of the publishers has been more cautious regarding the post prints).

⁴⁶⁸ Björk, 'Open Access' (n 484) 7.

⁴⁶⁹ *Ibid* 7-8 (also mentioning Elsevier as an interesting case because for a long time they have allowed posting in IR unconditionally and recently have changed policy, only allowing posting if it is voluntary, whereas if a mandate policy is in place at an institution, Elsevier requires a separate agreement with that institution).

⁴⁷⁰ See SHERPA/RoMEO, Publisher Copyright Policies & Self-Archiving <<http://www.sherpa.ac.uk/romeo/index.php>> accessed 27 May 2013.

⁴⁷¹ Mikael Laakso, 'Journal Publisher Self-Archiving Policies and the Potential for Growth in Open Access' (Hanken School of Economics 2013) as cited in Björk, 'Open Access' (n 484) 7. Laakso, 'Journal Publisher Self-Archiving Policies and the Potential for Growth in Open Access' (n 471) 7.

only after an embargo period of up to 24 months are added, the total share for which green self-archiving is allowed rises to 81 per cent.⁴⁷²

Besides rights of self-archiving – or circulating gratis the research output – reuse rights equally constitute the core of OAP, as far as the libre OAP is concerned and endorsed by the major OAP declarations and definitions. As Suber highlighted, libre OA always needs a licence to spell out the terms in which the content is freed from some copyright restrictions, as the default mode of work of authorship and scholarship is all-rights-reserved since the moment of their creation.⁴⁷³ Clearly, in these licences, the degrees to which content is libre OA may vary according to the copyright restrictions that are waived. Therefore, the types of libre OA may vary accordingly. For this reason, as Suber points out, ‘there are many nonequivalent open licences and nonequivalent types of libre OA.’⁴⁷⁴ There are several ready-made open licences, and authors and publishers can always come up with their own; however, the CC open licences are the best-known, most widely used, and those generally endorsed by the OAP community and initiatives. Looking at the range of libre OA from the point of view of CC licences, the maximal degree of libre OA belongs to works dedicated to the public domain through a CC-Zero licence and works licensed under a CC-BY, allowing any use provided that attribution is given. Lesser degrees of libre OA are supported by CC-BY-NC, which requires attribution and prevents commercial use, and CC-BY-ND, which requires attribution and prevents derivative works. According to Suber, these licences represent the ‘different flavors of libre OA’.⁴⁷⁵ The CC-BY licence has a critical role within the OAP movement as it is recommended by relevant OAP initiatives, such as the recent OASPA⁴⁷⁶ and the DOAJ and SPARC Europe Seal of Approval Program for OA journals,⁴⁷⁷ or even made

⁴⁷² Ibid.

⁴⁷³ See Suber, *Open Access* (n 179) 67.

⁴⁷⁴ Ibid 68.

⁴⁷⁵ Ibid 69. See also, discussing possible termination of OA licences under US federal law, Timothy K Armstrong, ‘Shrinking The Commons: Termination Of Copyright Licenses And Transfers For The Benefit Of The Public’ (2010) 47 Harv. J. on Legis. 359. Cf Chris Armbruster, ‘Cyberscience and the Knowledge-based Economy. Open Access and Trade Publishing: from Contradiction to Compatibility with Nonexclusive Copyright Licensing’ (2008) 12 Int’l J. Comm. L. Pol’y <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=938119> accessed 1 July 2013 (arguing that universities and governments, scholars and publishers should the emergence of a competitive market that is based on nonexclusive rights by the adoption of standard copyright licenses that reserve some rights, namely Attribution and No Derivative Works, but otherwise will allow for the unlimited reproduction, dissemination and re-use of the research article, commercial uses included).

⁴⁷⁶ OASPA, Why CC-BY? <<http://oaspa.org/why-cc-by>> accessed 1 July 2013. See also OASPA, Growth in Use of the CC-BY Licence (8 March 2013) <<http://oaspa.org/growth-in-use-of-the-cc-by-license-2>> accessed 1 July 2013.

⁴⁷⁷ See SPARC Europe, SPARC Europe Seal for Open Access Journals <<http://sparceurope.org/our-work/sparc-europe-seal-for-open-access-journals>> accessed 1 July 2013; DOAJ, How do I get the SPARC Europe Seal for Open Access Journals? <<http://www.doaj.org/doaj?func=loadTempl&templ=faq>> accessed 1 July 2013. See also, among leading OA journals using CC-BY, BioMed Central, The Open Access Publisher, About us

mandatory as in the case of the recent Research Councils of United Kingdom OA mandate policy.⁴⁷⁸

Suber has noted that, although the BBB definition calls for both gratis and libre OA, so far ‘most of the notable OA success stories are gratis and not libre’.⁴⁷⁹ In truth, most OA journals are not using open licences and operate under an all-rights-reserved regime.⁴⁸⁰ The DOAJ provides instructive data in this respect. Roughly 35 per cent of the titles listed in the directory use CC licences, with approximately 17 per cent using the DOAJ recommended CC-BY.⁴⁸¹ However, the numbers are rising at a fast pace. A couple of years ago, only 20 per cent of the DOAJ titles were using CC licences, with fewer than 11 per cent using CC-BY.⁴⁸² In fact, when publishing in some of the most reputable OA journals, including PLoS, Biomed Central, and Hindawi, authors retain the copyright on their articles, which are freely distributed under a Creative Commons Attribution Licence (CC-BY) and therefore can be unrestrictedly re-used, distributed in any medium, provided that the original work is correctly cited.⁴⁸³ Although still a minority, CC licences are becoming increasingly popular for OA journals – and publications at large – after an initial period in which ‘most born OA journals even lacked explicit agreement with the authors or information about usage rights’.⁴⁸⁴ Among large publishers CC licences could be even more popular than across the entire market. In an EC funded study, Dallmeier-Tiessen and others found that 7 out of 14 large OA publishers, which represented 72 per cent of 616 journals, were using CC licences.⁴⁸⁵ In contrast,

<http://www.biomed_central.com/about> accessed 10 June 2013 (indicating that authors publishing with BioMed Central retain the copyright to their work, licensing it under the Creative Commons Attribution License).

⁴⁷⁸ See Research Councils of United Kingdom (RCUK), ‘Policy on Open Access and Supporting Guidance’ (6 March 2013) 2 <<http://www.rcuk.ac.uk/documents/documents/RCUKOpenAccessPolicy.pdf>> accessed 16 March 2013 (stating that ‘[w]here the RCUK OA block grant is used to pay Article Processing Charges for a paper, the paper must be made Open Access immediately at the time of on line publication, using the Creative Commons Attribution (CC BY) licence’).

⁴⁷⁹ See Suber, Open Access (n 179) 71.

⁴⁸⁰ Ibid 72.

⁴⁸¹ See DOAJ, Browse by Licence <<http://www.doaj.org/doaj?func=byLicense&uiLanguage=en>> accessed 1 July 2013.

⁴⁸² See Suber, Open Access (n 179) 72.

⁴⁸³ See, for example, Biomed Central (n 287); Hindawi, Institutional Memberships <<http://www.hindawi.com/memberships>> accessed 10 June 2013;

⁴⁸⁴ Bo-Christer Björk, ‘Open Access—Are the Barriers to Change Receding?’ (2013) 1(1) Publications 5, 7 <<http://dx.doi.org/10.3390/publications1010005>> accessed 1 July 2013

⁴⁸⁵ See Dallmeier-Tiessen and others, ‘Open Access Publishing’ (n 638).

Dallmeier-Tiessen and others also reported, only 27 per cent of journals, among small publishers, were using CC licences.⁴⁸⁶

On a final note, it is worth noting that digitisation has changed the business models governing the publishing market. Dematerialisation has forced publishers to switch from the traditional sale of physical copies to licensing agreements governing the access and use of research outputs, the control of which is enforced by technological protection measures. Although these are broader issues than those reviewed in this study, nonetheless they crucially overlap with the discussion of OAP. In particular, technological protection measures have added additional restrictions to the use and reuse that users can make of research outputs circulating in digital form,⁴⁸⁷ especially e-books.⁴⁸⁸ As Suber noted above, very often gratis OA materials may still be subject to the restrictions that are enforced by digital rights management systems.

2.2.5 Economies of Prestige, Academic Careers, and OAP

As we have seen, scientific authors surrender their copyright for free to high impact factor publishers to maximise the reputational value that can be extracted from their works of scholarship. This, in turn, empowers publishers with absolute control over conditions of access to, and reuse of, scientific literature. In fact, it is worth noting, as some literature has highlighted, that the position of the academic community within this conundrum is far from transparent. Paul Horowitz has addressed the impact of online media on the gatekeepers who have traditionally certified scholars and their scholarship as elite. He observes that academic legal scholars who have benefited from online media and paid lip service to egalitarian distribution of scholarship have also sought validation and enhanced status from the traditional gatekeepers they criticise. This, he concludes, has perpetuated the tension between elitism and egalitarianism, in part because the legal academy is overly concerned with making and trading prestige as a cultural product.⁴⁸⁹

⁴⁸⁶ Ibid.

⁴⁸⁷ See Caso, 'Scientific Knowledge Unchained' (n 439) 11; Reichman and Okediji, 'When Copyright Law and Science Collide' (n 431) 1460-1465; Oppenheim, 'Electronic Scholarly Publishing and Open Access' (n 590) 583-584.

⁴⁸⁸ Niva Elkin-Koren, 'The Changing Nature of Books and the Uneasy Case for Copyright' (2011) 79 *George Washington L Rev* 101 <<http://ssrn.com/abstract=1909176>> accessed 13 June 2013; Rachel A Geist, 'A "License to Read": the Effect of E-books on Publishers, Libraries, and the First Sale Doctrine' (2012) 52 *IDEA* 63; Michael Hiltzik, 'E-book Restrictions Leave "Buyers" with Few Rights' (*Los Angeles Times*, 22 December 2012) <<http://www.latimes.com/business/la-fi-hiltzik-20121223,0,1032270.column>> accessed 26 March 2013.

⁴⁸⁹ See Paul Horowitz, 'Evaluate Me!': Conflicted Thoughts on Gatekeeping in Legal Scholarship's New Age' (2007) 39(1) *Connecticut L Rev* CONNtemplations 38 <http://connecticutlawreview.org/files/2012/04/Horwitz_Final.pdf> accessed 23 January 2013.

In this respect, Ulrich has discussed the acceptance of OA from the perspective of Bourdieu's theory of scientific capital.⁴⁹⁰ In this context, traditional claims for OA, based on acceleration of scientific communication, financial arguments, reduction of the digital divide, enhanced participation, and levelling of disparities, become less relevant. Rather, 'it is crucial for open access [. . .] to understand how scientists perceive its potential influence on existing processes of capital accumulation and how open access will affect their demand for status.'⁴⁹¹ Therefore, the reputational value that OA publications will produce will be determinant in defining its success. In this respect, according to Bourdieu's theory, OA may face difficulties in replacing other forms of academic publishing, while OA journals continue to be partially ignored in efficiency ratings, evaluations and appointments.⁴⁹²

Additional literature has focused on researchers' attitude towards open access in light of the traditional economies of prestige of academic publishing. Generally, several authors have found that the coexistence of closed and open access may create an inefficient Nash Equilibrium as a consequence of the lock-in effects that follow from the reputation advantage of established non-OA publications.⁴⁹³ In similar fashion, after conducting a survey analysing attitudes from 481 scientists, Mann and others concluded that researchers tend to exhibit a 'wait and see' attitude towards OAP.⁴⁹⁴

Mindful of the inefficiency of the present system, the literature has been investigating – with more research critically necessary in this field – new economies of prestige through Open Access. Michael Madison, for example, explored how the current economy of prestige of academic publishing thwarts efforts to supplant that economy via OAP and what can be done to change that economy.⁴⁹⁵ To counter the perception that open access threatens the status quo, Madison suggests recreating the economy of prestige by digitally tagging, classifying and rating articles so that Internet search engines can read them. Prestige would be associated with the tags, instead of, or in addition to, the journal's institutional prestige.

⁴⁹⁰ Ulrich, 'Sociological Implications of Scientific Publishing Open Access' (n 490).

⁴⁹¹ Ibid.

⁴⁹² See Bo-Christer Björk 'Open Access to Scientific Publications - An Analysis of the Barriers to Change, (2004) 9(2) Information Research 1 <<http://informationr.net/ir/9-2/paper170.html>> accessed 16 March 2013.

⁴⁹³ See Eberhard Feess and Marc Scheufen, 'Academic Copyright in the Publishing Game: A Contest Perspective' (2012) J. Cultural Economics' 1, 7 <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1793867> accessed 16 March 2013; Bernius and others, 'Open Access Models and their Implications for the Players on the Scientific Publishing Market' (n 227) 105; Shavell, 'Should Copyright Of Academic Works Be Abolished?' (n 438) 331; Matthias Hanauske, Steffen Bernius and Berndt Dugall, 'Quantum Game Theory and Open Access Publishing' (2007) 382 Physica A 650, 650-664 <<http://arxiv.org/abs/physics/0612234>> accessed 13 June 2013.

⁴⁹⁴ See Florian B Mann and others, 'Open Access Publishing in Science: Why it is Highly Appreciated but Rarely Used' (2008) 51 Communications of the ACM <www.researchgate.net/publication> accessed 13 June 2013.

⁴⁹⁵ Michael J Madison, 'The Idea of the Law Review: Scholarship, Prestige and Open Access' (2006) 10 Lewis & Clark L Rev 901.

As an additional solution to enhance reputational value in the academic publishing market, Jens Prüfer and David Zetland have proposed an auction market for journal articles.⁴⁹⁶ Prüfer and Zetland's auction model would like to replace the current system for submitting academic papers with an auction solution with virtual revenue sharing to fix, and enhance, academic reputational incentives. The authors describe the timeline of this system in the following terms:

[i]n period zero, the author writes, markets and submits his paper to the AMJA [Auction Market for Journal Articles] auction server. In period one, editors screen and value papers. In period two, editors bid for papers. Winning bids—in 'academic dollars' or A\$—go to the authors, editors and referees of articles cited in auctioned papers. In period three, referees review papers. Editors decide to accept or reject papers in period four.⁴⁹⁷

The 'nonpecuniary income ['academic dollars']', the authors explain, 'indicates the academic impact of an article – facilitating decisions on tenure and promotion'.⁴⁹⁸ The key idea here is that the reputational revenues coming from the bid are not internalised by new authors for whom editors are bidding but by the academic publishing system from which the new work has been cumulatively created. The auction model, therefore, establishes a virtuous system of recognition of previous contributions in which reputational value is objectively compensated – through a virtual academic reputational currency – at the moment any new academic work is submitted. As Alex Tabarrok has suggested, turning virtual 'academic dollars' into real money may achieve the goal not only of redefining submission practice but also sustaining journal publishing and OA models.⁴⁹⁹ Actually, 'publishers will be willing and able to pay for papers because they expect to earn revenues when in turn those papers are cited'.⁵⁰⁰ The practical question here is how the system might get off the ground in order to become self-sustaining, as it is clear that at the very beginning publishers will not earn any revenues, whereas they should be investing money in bidding. In any event, regardless of its capacity for materially supporting the publishing industry (which in fact Prüfer and Zetland do not discuss in their paper), the auction market for journal

⁴⁹⁶ See Jens Prüfer and David Zetland, 'An Auction Market for Journal Articles' (2010) 145 (3/4) *Public Choice* 379, 379-403 <<http://link.springer.com/content/pdf/10.1007%2Fs11127-009-9571-3.pdf>> accessed 13 June 2013. See also Thomas M Havrilesky, 'Towards a More Competitive Market for Scholarly Output' in *Frontiers of Economics* (University Publications 1975) 61-69.

⁴⁹⁷ Prüfer and Zetland, 'An Auction Market for Journal Articles' (n 496) 380.

⁴⁹⁸ *Ibid.*

⁴⁹⁹ See Alex Tabarrok, 'A Market for Journal Articles' (Marginal Revolution, 16 November 2004) <http://marginalrevolution.com/marginalrevolution/2004/11/a_market_for_jo.html> accessed 13 June 2013 (commenting on an earlier draft of David Zetland discussing the same idea then published in 2010 with Prüfer).

⁵⁰⁰ *Ibid* 379.

articles still remains a valuable proposal for moving reputational incentive at the core of the academic publishing system.

2.2.6 Recalibrating or Abolishing Copyright for Academic Works?

In light of the incentive mechanics of academic authorship that we have discussed earlier, Lydia Loren Pallas argues that ‘differently motivated works’, including scholarly articles, do not need robust copyright.⁵⁰¹ This view has been largely shared by recent scholarship and exported well beyond the context of academic publishing. Several scholars have proposed copyright reform, arguing more broadly that motivation should be taken into consideration in determining the scope of copyright protection in any field.⁵⁰² Suber, in particular, has discussed a reform of copyright law in the context of OAP that should tackle directly the collision between copyright and science evoked by Reichman and Okediji. Suber proposes three phases for creating an intellectual commons through OA, including a revision of copyright law that should (i) encompass enlargement and protection of the public domain by rolling back copyright term extensions, (ii) assure that copyright law preempts contract or

⁵⁰¹ Lydia Pallas Loren, ‘The Pope’s Copyright? Aligning Incentives with Reality by Using Creative Motivation to Shape Copyright Protection’ (2008) 69 La. L. Rev. 1 (noting that motivation should be taken into consideration in determining the scope of copyright protection and concluding that, for works created and distributed without the primary motivation being the marketable right provided by copyright law, robust copyright is not necessary).

⁵⁰² Several scholars have argued that motivation should be taken into consideration in determining the scope of copyright protection. See, for example, in Europe, Marco Ricolfi, ‘Consume and Share: Making Copyright Fit for the Digital Agenda’ in M Dulong de Rosnay and J.C. De Martin (eds), *The Digital Public Domain: Foundations for an Open Culture* (Open Book Publishers 2012) 49-60; Marco Ricolfi, ‘Copyright Policies for Digital Libraries in the Context of the i2010 Strategy’ (1st COMMUNIA Conference, Louvain-la-Neuve, Belgium, 1 July 2008) 5-7, 12 <<http://www.communia-project.eu/node/110>>; Christoph Geiger, ‘Promoting Creativity through Copyright Limitations: Reflections on the Concept of Exclusivity in Copyright Law’ (2011) 12 Vand J Ent Tech L 547 (proposing the dual regime in the context of creative reuses); and A Peukert, ‘A Bipolar Copyright System for the Digital Network Environment’ (2005) 28 Hastings Comm & Ent L J 1 (proposing a dual system in the context of peer-to-peer file sharing). For similar views in the United States, see, for example, Christopher May, ‘Bounded Openness: The Future of Political Economy of Knowledge Management’ (2011) 33(8) EIPR 477, 479-480 (arguing that the system of IP will evolve into parallel hard and soft systems, which allow various levels of exclusivity and openness depending on the sectors and use of particular technologies that will dispense with the ‘one-size-fits-all’ approach of the TRIPS Agreement); Larry Lessig, ‘Keynote Speech’ (WIPO Global Meeting on Emerging Copyright Licensing Modalities – Facilitating Access to Culture in the Digital Age, Geneva, Switzerland, 4 November 2010) <http://www.freedomtodiffer.com/freedom_to_differ/2010/11/larry-lessig-calls-for-wipo-to-lead-radical-overhaul-of-copyright-law.html>; Lawrence Lessig, *Remix: Making Art and Commerce Thrive in the Hybrid Economy* 33, 254-259 (Bloomsbury 2008); Lydia Pallas Loren, ‘The Pope’s Copyright? Aligning Incentives with Reality by Using Creative Motivation to Shape Copyright Protection’ (2008) 69 La. L. Rev. 1 (noting that motivation should be taken into consideration in determining the scope of copyright protection and concluding that, for works created and distributed without the primary motivation being the marketable right provided by copyright law, robust copyright is not necessary).

licensing law, (iii) establish first sale doctrine for digital content, and (iv) restore fair dealing and fair-use rights denied by technological protection measures.⁵⁰³

Some authors have gone even further and discussed the opportunity of abolishing copyright for academic works. Recently, in a widely discussed paper, Steven Shavell wonders: 'Should Copyright for Academic Works be Abolished?'.⁵⁰⁴ In seeking the abolishment of copyright, Shavell develops a model in which transitioning from a reader-pay to an author-pay system should increase readership and encourage research from readership-motivated academic authors. Shavell suggests that if copyright were to be abolished, this would render the supply of scientific journal content perfectly competitive, causing subscription prices to drop to marginal cost, which in the case of online access is close to zero.⁵⁰⁵ This, in turn, would maximise the diffusion of academic works – which is in itself a socially positive outcome – and enhance the reputational value for authors by expanding the size of the readership. In Shavell's view, enhanced readership would increase the reputation benefit of research, thus also inducing universities to cover the authors' publication fees. In addition, Gienas seems to conclude that copyright may hinder the circulation of scientific works.⁵⁰⁶

However, as Gienas notes,⁵⁰⁷ together with Alexander Peukert, under a traditional copyright theory it may be difficult to justify abolition of copyright for academic works. In fact, in Peukert's opinion – if we distinguish between a copyright perspective and a perspective that takes as its starting point the philosophy and sociology of science in discussing scientific works and the scholarly communication system in general – only the scientific perspective is capable of explaining and adequately regulating the current change taking place in the scholarly communication system.⁵⁰⁸ Again, literature has proved to be cautious regarding the abolition of copyright as it may have a negative impact on the quality

⁵⁰³ Peter Suber, 'Creating an Intellectual Commons through Open Access' (n 90) 178. See also Ann Bartow, 'Open Access, Law, Knowledge, Copyrights, Dominance and Subordination' (2006), 10 *Lewis & Clark L. Rev.* 869 (discussing whether an OA approach to legal knowledge is realistically attainable without fundamental changes to the copyright laws – including the adoption of compulsory licensing regimes with respect to proprietary legal resources, and significant government subsidies as well – that would recalibrate the power balance between content owners and citizens desiring access to interpretive legal resources).

⁵⁰⁴ See Shavell, 'Should Copyright of Academic Works Be Abolished?' (n 438) 301-358.

⁵⁰⁵ *Ibid* 302.

⁵⁰⁶ See Krzysztof Gienas, 'Scientific Works: Another Dimension of Copyright Perspective', (2008) 3(12) *JiPLP* 801, 801-803.

⁵⁰⁷ *Ibid* 801-803 (arguing that as far as copyright theory is concerned, scientific works can be protected but their character is special).

⁵⁰⁸ See Alexander Peukert, 'Das Verhältnis zwischen Urheberrecht und Wissenschaft: Auf die Perspektive kommt es an! [The Relationship between Copyright and Science: A Matter of Perspective!]' (2013) SSRN Working Papers Series <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2268906> accessed 1 July 2013.

of journals.⁵⁰⁹ Other literature has countered the proposal for abolishing copyright for academic works in the specific context of OAP, and in particular Shavell's proposal, on the ground that 'needlessly suggesting that copyright reservation/reform is or ought to be made a prerequisite for OA simply slows down progress toward reaching the universal Green OA that is already fully within the global research community's grasp.'⁵¹⁰

In a Position Paper on the knowledge economy focusing on scientific research by the Max Planck Institute for Intellectual Property, Competition and Tax Law, the authors comment on all the constraints that excessive copyright exclusivity, contractual arrangements between end-users and rightholders and technology protection measures may bring to the wider dissemination of scientific research.⁵¹¹ In looking at the scientific research market with the goal of suggesting legislative reform to the European Commission, the Position Paper argues that, as they stand, limitations are not sufficient to guarantee wider dissemination and accessibility of scholarship and, in any event, limitations alone may not be capable of reaching those goals. As the Position Paper states, 'in the academic journal sector, the free flow of scientific knowledge may be impeded if the exclusive right enjoyed by a few academic publishers is exercised in an excessive manner, whereas the authors, by whom the content has been generated, usually care more about reputation and impact as important factors for their personal careers'.⁵¹² According to the Max Planck Institute, copyright exclusivity brings negative competitive effects on the disseminator's level. The licensing practices urging academic authors to grant exclusive licences to one publisher narrow the number of potential sources of scholarly works for the end-user.⁵¹³ Libraries and end-users may face a 'single-source situation' forcing them either to accept unreasonable conditions or desist from accessing the materials. At the same time, contractual arrangements are likely to benefit rightholders more than users.⁵¹⁴ Therefore, legislative reform should intervene both at the end-user and intermediaries' level. So, at the end-user level, 'limitations most relevant

⁵⁰⁹ See Frank Müller-Langer and Richard Watt, 'Copyright and Open Access For Academic Works' (2010) 71 Rev Econ Research on Copyright Issues 45, 45-65 <<http://www.serci.org/2010/frank.pdf>> accessed 16 March 2013; Richard Watt, 'Introduction: Copyright and the Publishing of Scientific Works' (2010) 7(1) Review of Economic Research on Copyright Issues 1, 1-6; Mark J McCabe and Christopher M Snyder, 'Open Access and Academic Journal Quality' (2005) 95(2) The American Economic Review, Papers and Proceedings 453, 453-458.

⁵¹⁰ Stevan Harnad, 'Conflating Open Access With Copyright Reform: Not Helpful to Open Access' (*Open Access Archivangelism*, 29 July 2009) <<http://openaccess.eprints.org/index.php?archives/618-Conflating-Open-Access-With-Copyright-Reform-Not-Helpful-to-Open-Access.html>> accessed 18 March 2013. See also Hossein Nabilou, 'A Response to Prof. Shavell's "Should Copyright of Academic Works be Abolished?"' (2010) 7(1) Review of Economic Research on Copyright Issues 30.

⁵¹¹ See Reto Hilty and others, 'European Commission: Green Paper: Copyright in the Knowledge Economy – Comments by the Max Planck Institute for Intellectual Property, Competition and Tax Law' (2009) 40(3) IIC 309.

⁵¹² Ibid 312.

⁵¹³ Ibid 309.

⁵¹⁴ Ibid 310.

to scientific research should be mandatory, immune towards contractual agreements and technological protection measures'.⁵¹⁵ At the intermediaries' level the existence of multiple sources and fair competition among publishers and other intermediaries with respect to the individual research outputs should be better secured, considering additional legal measures based on copyright or competition law. In this respect, the Position Paper concludes that exclusivity could be constrained alternatively (i) introducing binding rules of copyright contract law, limiting the possibility for scientific authors to give away exclusive rights to single publishers; (ii) introducing an element of price control in case of exploitation with the establishment of some kind of expert body to settle disputes about pricing; (iii) allowing for parallel dissemination of the same content, provided a predetermined, collectively administered compensation to safeguard the legitimate interest of rightholders; or (iv) introducing an obligation to enter into negotiations between the parties involved to provide further intermediaries with a licence for parallel dissemination under adequate, competition-oriented terms and conditions, with an expert body determining the adequacy of the conditions in case of disputes between the parties.⁵¹⁶

2.3 OPEN ACCESS, DEVELOPING COUNTRIES AND SCIENTIFIC DIVIDE

The economist Joseph Stiglitz has suggested that 'developing countries are poorer not only because they have fewer resources, but because there is a gap in knowledge. That is why access to knowledge is so important.'⁵¹⁷ A study by the UK Commission on Intellectual Property Rights (CIPR) serves as one of the most worrying reports on access to technology in education. The CIPR states that several consultations within developing countries have shown serious problems of access to software, textbooks, and specialised technical material. The Report explains:

The arrival of the digital era provides great opportunities for developing countries in accessing information and knowledge. The development of digital libraries and archives, Internet based distance learning programmes, and the ability of scientists and researchers to access sophisticated on-line computer databases of technical information in real time are just some examples. But the arrival of the digital era also poses some new and serious threats for access and dissemination of knowledge. In particular, there is a real risk that the potential of the Internet in the developing world will be lost as rights owners use technology to prevent public access through pay-to-view systems.⁵¹⁸

⁵¹⁵ Ibid 310, 317-320.

⁵¹⁶ Ibid 322-323.

⁵¹⁷ Joseph Stiglitz, 'Innovation: A Better Way Than Patents' (2006) 2569 New Scientist 21, 21.

⁵¹⁸ See Berne Convention (n 403) art 9(2).

Developing on this point, Andres Guadamuz discussed how, together with literacy, technological, and linguistic barriers, strong propertarian models over access to educational materials may heighten, rather than reducing the digital divide.⁵¹⁹ The potential for a 'learning revolution' that new digital technologies make possible⁵²⁰ may be easily banished by 'infogopolies' increasingly pushing towards more international protection and more stringent copyright enforcement.⁵²¹

Intellectual property – and the steady expansion of international minimum IP standards in the last few decades – lies at the core of the digital and educational divide insofar as it produces dead-weight loss by increasing the costs of purchasing content beyond levels that become unaffordable for users in developing countries. In fact, some exceptions in education related areas are provided by international agreements, such as Article 9(2) of the Berne Convention allowing signatory countries to pass exceptions to copying for public interest or educational purposes. However, they seem scarcely enough to overcome intellectual property strictures and, furthermore, rebalance the access to knowledge divide between the Global North and Global South. Throughout the decades, proposals have been made to increase the scope given to developing countries for enacting exceptions to international agreements in education-related works, such as translations, and other exceptions relating to works of scientific, research or educational interest, but they have been ratified only in extremely weak forms.⁵²² Given the unsatisfactory condition of the political economy of international IP, in recent times a trend towards advocating open IPR models by emerging and developing countries is increasingly emerging in an attempt to counter the traditional history of the international IPR treaty system, which in contrast has tended towards strong requirements of minimum IP standards.⁵²³

A large portion of the OAP literature has placed a special emphasis on the need to rebalance the discourse about knowledge between the Global North and South. Willinsky construed his 'access principle' with specific attention to the value that it may provide in

⁵¹⁹ Andres Guadamuz Gonzalez, 'The Digital Divide: it's the Content, Stupid: Part 2' (2005) 11(4) CTLR 113.

⁵²⁰ See Mitchel Resnick, 'Rethinking Learning in the Digital Age' in Geoffrey S Kirkman (ed), *The Global Information Technology Report 2001-2002: Readiness for the Networked World* (OUP 2002) 32.

⁵²¹ See Guadamuz Gonzalez, 'The digital divide' (n 207) 114. See also Drahos with Braithwaite, *Information Feudalism* (n 60) 169-186 (discussing the notion of 'infogopolies' and their effects on the cultural environment).

⁵²² Sam Ricketson, *The Berne Convention for the Protection of Literary and Artistic Works: 1886-1986* (Kluwer 1987) Ch 11; Guadamuz Gonzalez, 'The digital divide' (n 207) 114.

⁵²³ See David W Opderbeck, 'The Penguin's Paradox - The Political Economy of Int'l IP and the Paradox of Open IP Models' (2007) 18 Stan L. & Pol'y Rev 101. See also Nicole M Thomas, 'An Education: The Three-step Test for Development' (2012) 34(4) EIPR 244; John H Barton and Keith E Maskus, *Economic Perspectives on a Multilateral Agreement on Open Access to Basic Science and Technology* (2004) 1(3) SCRIPT-ed 369 (setting out a general proposal for a multilateral agreement on 'open access' in basic science and technology and discussing the economic foundations for such an accord and the principal issues that would emerge in establishing it).

redressing the inequality of the North-South information order by arguing that the promise of OAP systems is precisely that they 'can be installed and controlled locally, while offering a global presence through sophisticated indexing schemes'.⁵²⁴ As Danner noted, discussing Willinsky's arguments, 'the access principle thus calls not only for a freer flow of information from developed to developing nations, but (and more importantly in the long term), for creating the means for scholars everywhere to contribute to the discourse of their discipline'.⁵²⁵

With specific emphasis on biomedical research literature, authors have argued that excluding the poor from access and free reuse of literature may harm global public health.⁵²⁶ In particular, Gavin Yamey has suggested that biomedical literature should be considered a global public good, according to international declarations, such as the Universal Declaration of Human Rights (UDHR) and the International Covenant on Economic, Social, and Cultural Rights (ICESCR), that promote access to scientific and medical knowledge as a human right.⁵²⁷ Again, the Geneva Declaration of Principles – adopted within the context of the World Summit on the Information Society – seems to support this idea even further by noting in Article B3.28 that '[w]e strive to promote universal access with equal opportunities for all to scientific knowledge and the creation and dissemination of scientific and technical information'.⁵²⁸

There are programmes for providing low cost or free access to journals in selected subjects to researchers in developing countries.⁵²⁹ Among these programmes, Research4forLife is a partnership of the World Health Organization (WHO), Food and Agriculture Organization (FAO), United Nations Environment Program (UNEP), Cornell and Yale Universities, and the International Association of Scientific, Technical & Medical Publishers, which has been designed to provide free or low cost online access to peer-reviewed content to developing countries.⁵³⁰ This partnership has launched three subject-

⁵²⁴ Willinsky, *The Access Principle* (n 3) 104-105.

⁵²⁵ Danner, 'Applying the Access Principle in Law' (n 366) 358. See also Richard A Danner, 'Open Access to Legal Scholarship: Dropping the Barriers to Discourse and Dialogue' (2012) 7(1) JICLT 65 (considering the challenges of providing open access legal scholarship to developing countries).

⁵²⁶ See Yamey, 'Excluding the Poor from Accessing Biomedical Literature' (n 185) 21.

⁵²⁷ Ibid 26-28. See also Willinsky, *The Access Principle* (n 3) 143-154 (noting that these declarations make a distinction between sharing in scientific advancement and enjoying the benefits of such progress, both to be considered as a human right).

⁵²⁸ Geneva Declaration on Principles (adopted 12 December 2003) WSIS-03/GENEVA/DOC/0004 art B3.28 <<http://www.itu.int/ws/s/docs/geneva/official/dop.html>> accessed 18 May 2013.

⁵²⁹ See Willinsky, *The Access Principle* (n 3) 101-103. See also Oppenheim, 'Electronic Scholarly Publishing and Open Access' (n 220) 584-585.

⁵³⁰ See Research4Life <<http://www.research4life.org>> accessed 1 June 2013.

specific programmes, including the WHO's Health InterNetwork Access to Research Initiative (HINARI),⁵³¹ FAO's Access to Global Online Research in Agriculture (AGORA)⁵³² and UNEP's Online Access to Research in the Environment (OARE).⁵³³ Each of these programmes focuses on the sciences and provides access to a few law journals. In a broader perspective, and still with particular emphasis on African and other developing countries, UNESCO has promoted an Open Access Programme to facilitate the development and adoption of OA-enabling policies.⁵³⁴ Again, other initiatives have been created by journal publishers themselves. For example, the New England Journal of Medicine makes online access free to more than one hundred low-income countries, whose users are recognised automatically by their IP addresses.⁵³⁵ Biomed Central, as well as providing immediate online OA to the full text of the articles published by its portfolio of 255 peer-reviewed journals, has created a project that aims to increase the visibility of scientific research across the developing world and includes an OA waiver fund, enabling scientific authors in low-income countries to overcome the financial barriers to publishing in open access journals.⁵³⁶ Similarly, BioMed Central has established a Foundation Membership initiative and offers an Open Access Package for a small fee in order to enable institutions from developing countries to support both open access publishing and self-archiving in situ.⁵³⁷ Stanford Highwire Press also helps its journals offer immediate OA to developing countries through a Highwire based programme offering access to countries appearing in the World Bank's list of 'low income economies' plus a number of other countries.⁵³⁸

⁵³¹ See HINARI, the World Health Organization's Health InterNetwork Access to Research Initiative, <<http://www.who.int/hinari/en>> accessed 13 June 2013.

⁵³² See AGORA (Access to Global Online Research in Agriculture), <<http://www.aginternetwork.org/en>> accessed 13 June 2013.

⁵³³ See OARE (Online Access to Research in the Environment) <<http://www.oaresciences.org/en>> accessed 13 June 2013.

⁵³⁴ See United Nations Educational Scientific and Cultural Organization (UNESCO), OPEN Access to Scientific Information <<http://www.unesco.org/new/en/communication-and-information/access-to-knowledge/open-access-to-scientific-information>> accessed 14 June 2013.

⁵³⁵ See NEJM, About NEJM, Access from Outside the U.S. <<http://www.nejm.org/page/about-nejm/access-for-low-income-countries>> accessed 10 June 2013.

⁵³⁶ See BioMed Central, Open Access in the Developing World – Connecting the Global Scientific Community, BioMed Central Open Access Waiver Fund <<http://www.biomedcentral.com/developingcountries/waiverfund>> accessed 10 June 2013.

⁵³⁷ See BioMed Central, Open Access in the Developing World – Connecting the Global Scientific Community, Information for Libraries <<http://www.biomedcentral.com/developingcountries/libraries>> accessed 10 June 2013.

⁵³⁸ See Highwire Stanford University, Free Access to Developing Economies <<http://highwire.stanford.edu/lists/devecon.dt>> accessed 1 July 2013.

The long-term benefits of these programmes are questioned by some open access advocates.⁵³⁹ In addition, Chan, Kirsop and Arunachalam have questioned whether the Research4Life programmes (HINARI, AGORA and OARE) organised in partnership between commercial publishers and UN agencies to provide free or low-cost access to journals in developing countries 'may be serving as a marketing device to prepare the ground for national site licenses in the countries with rising FNP or growing research needs'.⁵⁴⁰ They also note that because these programmes come 'with the blessings of the UN agencies and powerful commercial publishers, it has been hard to wean research communities off dependency systems and onto true open access (OA) resources'.⁵⁴¹ In contrast to programmes that make journals published in the developed countries available to developing countries, but do not foster creation and distribution of local journals, the Public Knowledge Project's Open Journals Systems (OJS) programme makes open source software freely available worldwide for the purpose of making OAP a more viable option for journals with limited resources.⁵⁴² The list of journals using OJS software includes 819 journals in Asia, 523 in Africa, 946 in Oceania, and 3,627 in South America.⁵⁴³

Also, Herb Ulrich seems to be concerned as to whether open access supports Western imperialism as, in his view, the notion that open access may reduce information poverty 'hides a glaring ethnocentrism'.⁵⁴⁴ Ulrich sees emerging countries represented as homogenous entities and objects, rather than actors, in the discourse about open access and the digital divide. In this discourse, developing countries are offered the opportunity to

⁵³⁹ See Williams E Nwagwu and Allam Ahmed, 'Building Open access in Africa' (2009) 45(1/2) *Int'l J of Tech Management* 82, 82-101 <http://www.inderscience.com/www/pdf/ijtmv45n12_oainafrika.pdf> accessed 1 June 2013. See also Danner, 'Open Access to Legal Scholarship' (n 525) 66; Peter Johan Lor and Johannes Britz, 'Knowledge Production from an African Perspective: International Information Flows and Intellectual Property' (2005) 37 *Int'l Info & Lib Rev* 61, 61-76 <<http://pages.gseis.ucla.edu/faculty/chu/edc/read/8-peterjohanlor.pdf>> accessed 1 June 2013;.

⁵⁴⁰ Leslie Chan, Barbara Kirsop and Subbiah Arunachalam, 'Towards Open and Equitable Access to Research and Knowledge for Development' (2011) 8(3) *PLoS Med* 1, 1.

⁵⁴¹ *ibid* 1-4.

⁵⁴² See Samuel Kwaku Smith Esseh, 'The Open Access (Open Journals System) Paradigm and the Production of Scholarly Journals in Developing Countries' (Master of Publishing project, Simon Fraser University 2006) <<http://ir.lib.sfu.ca/retrieve/2875/etd2183.pdf>> accessed 1 June 2013. See also Natalia Tavlör Bowdoin, 'Open Access, African Scholarly Publishing, and Cultural Rights: an Exploratory Usage and Accessibility Study' (2011) *Library Philosophy and Practice* (e-journal) <<http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1651&context=libphilprac>> accessed 16 February 2013

⁵⁴³ See Public Knowledge Project, *Journals Using Open Journal Systems by Continent* <<http://pkp.sfu.ca/ojs-geog>> accessed 13 June 2013.

⁵⁴⁴ See Ulrich Herb, 'Sociological Implications of Scientific Publishing Open Access: Science, Society, Democracy, and the Digital Divide' (2010) 15(2) *First Monday* <<http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/2599/2404>> accessed 16 January 2013. See also Ulrich Herb, 'Open Access - A Panacea? Science, Society, Democracy, Digital Divide' (2008) SSRN Accepted Paper Series <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1294475> accessed 1 July 2013.

partake in the Western scientific information free of charge by consuming open access publications. This construction, Ulrich concludes, ‘perpetuates the subordination of the developing countries under the expertise of the Western countries’⁵⁴⁵ and impedes the creation by developing countries of their own ‘scientific capital’ in Pierre Bourdieu’s terms.⁵⁴⁶

However, notwithstanding conflicting views and caveats, widely speaking authors see OA as an instrument that would reduce information poverty, as open access gives the opportunity to scientists anywhere to switch from the role of information consumers to information producers.⁵⁴⁷ In fact, studies have found that scientists and scientific information from emerging countries are strongly underrepresented in the global scientific discourse, both because journals from developed countries have significant higher impact factors⁵⁴⁸ and researchers from emerging countries are rarely found in editorial boards of high-impact journals.⁵⁴⁹ The explosive development of information and communications technologies in the North is often cited as widening the information gaps between researchers in the North and in the South, and making it harder for researchers and scholars in developing countries to participate fully in scholarly discourse.⁵⁵⁰ Visibility of research in developing countries has been highlighted as a critical issue in the discourse on access to knowledge and the scientific and educational divide. As put by Subbiah Arunachalam, ‘research conducted in developing countries lacks visibility. Nobody notices it. Nobody

⁵⁴⁵ Herb, ‘Sociological Implications of Scientific Publishing Open Access (n 544).

⁵⁴⁶ See Pierre Bourdieu, *Homo Academicus* (Polity Press 1988) (1984); Pierre Bourdieu, *Les Usages Sociaux de la Science: Pour une Sociologie Clinique du Champ Scientifique* (Editions Quae 1997) 28-36. See also Ulrich, ‘Sociological Implications of Scientific Publishing Open Access’ (n 490).

⁵⁴⁷ See Jutta Haider, ‘Of the Rich and the Poor and Other Curious Minds: On Open Access and ‘Development’ (2007) 59(4/5) ASLIB Proceedings 449, 449-461; Jutta Haider, 2006. ‘Conceptions of ‘information poverty’ in LIS: An analysis of discourses’ in Jane Kjertmann Jensen and others (eds), *Information, Innovation, Responsibility: Information Professional in the Network Society: Proceedings of the 14th BOBCATSSS Symposium* (Royal School of Library and Information Science 2006) 79–89; Jutta Haider and David Bawden, ‘Pairing Information with Poverty: Traces of Development Discourses in LIS’ (2006) 10(9/10) New Library World 371, 371-385.

⁵⁴⁸ See Peng Dong, Marie Loh and Adrian Mondry, ‘The ‘Impact Factor’ Revisited’ (2005) 2(7) Biomedical Digital Libraries 1 <<http://www.bio-diglib.com/content/2/1/7>> accessed 18 March 2013 (noting that open-access and non-English journals are underrepresented in impact factor sampling); Abel L Packer and Rogerio Meneghini, ‘Learning to Communicate Science in Developing Countries’ (2007) 32(9) Interciencia 643, 643–647 <http://www.interciencia.org/v32_09/643.pdf> accessed 18 March 2013 (finding that journals from the developed world have significantly higher impact factors).

⁵⁴⁹ See Tibor Braun and Ildikó Dióspatonyi, ‘Counting the Gatekeepers of International Science Journals a Worthwhile Science Indicator’ (2005) 89(9) Current Science 1548, 1548–1551 <<http://www.ias.ac.in/currsci/nov102005/1548.pdf>> accessed 18 March 2013.

⁵⁵⁰ Leslie Chan, Barbara Kirsop and Subbiah Arunachalam, ‘Open Access Archiving: The Fast Track to Building Research Capacity in Developing Countries’ (*SciDevNet*, 5 February 2005 <<http://www.esocialsciences.com/data/articles/Document12552006250.931698.pdf>> accessed 1 June 2013.

quotes it. It gets buried in an obscure corner of the world output of literature'.⁵⁵¹ Stressing the same critical point, Arunachalam, Chan and Kirsop have also noted that research generated in developing and emerging countries is "'missing" to the international knowledge base because of financial restrictions affecting its publication and distribution'.⁵⁵² Pippa Smart has pointed out that in the sciences the imbalance in what is published and accessible to researchers between North and South results in duplication of research, waste of resources, and biased interpretations of findings, and that poor dissemination and indexing of African research outside the African continent compounds the problem of low investment in local research.⁵⁵³

OAP seems a valuable option for the developing world to minimise this gap of underrepresentation⁵⁵⁴ and the geographic distribution of OA journals already shows that this option has been consistently embraced by the developing world.⁵⁵⁵ In 'The Access Principle', John Willinsky suggests that OAP models hold promise 'for broadening the circulation and exchange of knowledge [. . .] [and] of moving knowledge from the closed cloisters of privileged, well-endowed universities to institutions worldwide'.⁵⁵⁶ However, considering the impact factor constraints, OA may affect mainly the quantity of scientific information from emerging countries, rather than its global impact.⁵⁵⁷ In any event, quantity and broader circulation may still have important positive externalities, especially for the South-South exchange of knowledge. In a recent article, Arunachalam, Chan and Kirsop suggest that OA also 'provides an unprecedented opportunity for South-South exchange',

⁵⁵¹ Subbiah Arunachalam (2003), 'Information for Research in Developing Countries-Information Technology, a Friend or Foe?' (2003) 35 Int'l Info and Lib Rev 133, 137. See also Lor and Britz, 'Knowledge Production from an African Perspective' (n 539) 71-72.

⁵⁵² See Chan, Kirsop and Arunachalam, 'Towards Open and Equitable Access to Research and Knowledge for Development' (n 540) 2.

⁵⁵³ See Pippa Smart, 'Increasing the Visibility of Published Research: Journals OnLine' (2005) 52(2) Africa Today 39, 42-43.

⁵⁵⁴ But see, for a discussion of disincentives of emerging countries in participating in the OA movement, Jennifer I Papin-Ramcharan and Richard A Dawe, 'Open Access Publishing: A Developing Country View' (2006) 11(6) First Monday <<http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/1332/1252>> accessed 18 March 2013 (recounting the experience with open access publishing by researchers at the University of the West Indies (UWI) St. Augustine Campus in Trinidad and Tobago and noting that, together with well documented benefits for developing country researchers, there are some disincentives to participate in the OA movement, such as article fees and insufficient or absent technical infrastructures and Internet connectivity).

⁵⁵⁵ See Jutta Haider, 'The Geographic Distribution of Open Access Journals' (World Congress on Health Information and Libraries, Salvador de Bahia, Brazil, 20 September 2005) <<http://lup.lub.lu.se/luur/download?func=downloadFile&recordId=1549482&fileId=3738628>> accessed 18 March 2013.

⁵⁵⁶ Willinsky, *The Access Principle* (n 3) 33.

⁵⁵⁷ See Herb, 'Sociological Implications of Scientific Publishing Open Access (n 544).

noting that ‘research findings from regions with similar socio-economic conditions may be far more relevant than research from the richer countries’.⁵⁵⁸

The crucial question, however, remains how to practically implement OA in the developing world. Nwagwu and Ahmed, after pointing out that open access initiatives ‘are characterised by construction of websites containing resources which scientists are expected to use’, note that without ‘deliberate and organised efforts by communities in Africa, it will yet be proved whether the strategy of “build it and they will use it” will suffice in making the movement vibrant’. For Nwagwu and Ahmed, ‘[t]here is a need for a global community of stakeholder groups – librarians, authors, etc. – who will come together to champion the cause of OA’, funding from ‘non-profit foundations at global and national levels’, and backing by international organisations.⁵⁵⁹ An article by Chan and Kirsop points out that repositories and other archiving initiatives provide opportunities ‘to contribute to the global knowledge base by archiving their own research literature, thereby reducing the south to north knowledge gap and professional isolation . . . [and employing] an increasingly available means to distribute local research in a way that is highly visible and without the difficulties that are sometimes met in publishing in journals (e.g. biased discrimination between submissions generated in the north and south).’⁵⁶⁰ Again, Arunachalam, Chan and Kirsop argue that open archiving is the solution to this problem and urge awareness-raising and sharing of technical knowledge regarding creating and maintaining archives.⁵⁶¹ The same authors in a later article mention a ‘growing [. . .] awareness about institutional repositories’ in Africa due to the efforts of such organisations as Electronic Information for Libraries and the Electronic Publishing Trust for Development.⁵⁶²

2.4 CONCLUSIONS

⁵⁵⁸ See Chan, Kirsop and Arunachalam, 'Towards Open and Equitable Access to Research and Knowledge for Development' (n 540) 1-2.

⁵⁵⁹ Williams E Nwagwu and Allam Ahmed, 'Building Open access in Africa' (2009) 45(12) *Int'l J of Tech Management* 82, 91.

⁵⁶⁰ See Leslie Chan and Barbara Kirsop 'Open Archiving Opportunities for Developing Countries: Towards Equitable Distribution of Global Knowledge' (2002) 30 *Ariadne* 140-142 <<http://www.ariadne.ac.uk/issue30/oai-chan>> accessed 1 June 2013. See also Lor and Britz, 'Knowledge Production from an African Perspective' (n 539) 72.

⁵⁶¹ See Chan Leslie, Barbara Kirsop and Subbiah Arunachalam, 'Open Access Archiving The Fast Track to Building Research Capacity in Developing Countries' (*SciDevNet*, 5 February 2005) 9.

⁵⁶² See Chan, Kirsop and Arunachalam, 'Towards Open and Equitable Access to Research and Knowledge for Development' (n 540) 2. See also A N Ejikeme and M O Okoye, 'Open Access, Institutional Repositories, and Scholarly Publishing: the Role of Librarians in South Eastern Nigeria' (2011) *Library Philosophy and Practice* (e-journal) <<http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1644&context=libphilprac>> accessed 16 February 2013.

Looking at the legal aspects of academic publishing and OAP, with emphasis on the tension between copyright protection and circulation of scientific research outputs, may give the impression that a redressing of critical imbalances may be necessary. A questionable arrangement seems to be in place both at the level of management of individual rights and in the global perspective of the political economy of international IP rights. OA and OAP have the potential to relieve, at least in part, both these aspects of the unresolved and recently heightened tension between access and protection. The literature has provided a detailed look at a large proportion of the most pressing issues, although additional reviews may be welcome in connection with licensing issues, especially related to the combined effects of CC-BY and OAP on moral rights of integrity, copyright reform and OAP, and the interaction between economies of academic prestige, copyright rationale and OAP. In the next section, we will observe in detail the economics of the academic publishing market and the emergence of several OAP business models that may serve as a solution to minimise the tensions that the legal framework seems not to be able to address convincingly enough.

PART 3 – THE ECONOMICS OF OPEN ACCESS AND EMERGING BUSINESS MODELS

ABSTRACT

The third part of this literature review examines the more specifically economic aspects of traditional and OA academic publishing. Section 3.1 introduces the ‘unusual’ economics of academic publishing, when compared with other traditional creative industries. Section 3.2 contextualises the general discourse on the economics of academic publishing within the practical mechanics and historical development of the academic publishing industry, re-emphasising aspects related to the so-called ‘serial crisis’ and pricing issues that have prompted the reaction of the OAP movement to the present market arrangement. Section 3.3 analyses the emergence of OAP in the electronic environment, briefly reviewing publication models and channels. In Section 3.4, special emphasis will be given to the description of the miscellaneous OAP business models, increasingly implemented in both the academic journal and book publishing industry. Finally, Section 3.5 discusses the metrics and the value of OAP – such as citation and research impact, economic value, quality and peer review of OA publications – with special emphasis on the economic literature dealing with the topic.

3.1 THE ECONOMICS OF ACADEMIC PUBLISHING

Traditional scientific publishing is based on copyright enforcement, which restricts access and reuse of the protected content, and payment of a fee by the reader in order to access and use the publication. As noted by standard economics, ‘since a positive fee, over and above marginal access cost, is charged for access to the content, [. . .] this content is accessed to a socially inefficient level’.⁵⁶³ This arrangement parallels that of the traditional publishing industry, and any other copyright-based industry. Generally, the economics of copyright justify this market inefficiency in exchange for an incentive to provide content in the first place. In fact, as we have seen in the previous section, authors have noted that there are critical differences between traditional and scientific publishing as far as the traditional copyright incentive is concerned, both in terms of the reputational rather than economic incentive that encourages academic authors to create and the publicly funded nature of academic research.

⁵⁶³ Müller-Langer and Watt, ‘Copyright and Open Access For Academic Works’ (n 509) 63.

As highlighted also by an emerging economics literature placing the publishing market in a two-sided market, where journals act as intermediaries linking authors and readers,⁵⁶⁴ scholarly publishing relies on an unusual business model compared with other traditional creative industries.⁵⁶⁵ Economics authors have noted that, as a group, the scientific community provides both the supply and the demand for scientific research.⁵⁶⁶ Together with composing the readership of academic publishing, the academic community performs the research and provides the final written research output. Additionally, filtering of research for quality in the form of peer review is performed by the academic community. An important feature of academic publishing is the peer review process, in which authors submit their manuscripts to an editorial board, which then sends the paper out to a panel of peers in the field who assess the paper's quality and methods. Peer-review functions have traditionally been performed gratis by the academic community, which in return has gained prestige and reputation through that function.⁵⁶⁷ As McGuigan and Russell have described, this is a circular model in which faculty, scholars and students consume published knowledge, reuse it and create new content; academic publishers facilitate peer review, which is in fact performed by referee scholars, and package content in paper or electronic form; and academic libraries pay for the journal subscriptions in order to provide access to this content to faculty scholars and students.⁵⁶⁸ In this cycle, academic publishers simply

⁵⁶⁴ See Frank Müller-Langer and Richard Watt, 'Optimal Pricing and Quality of Academic Journals and the Ambiguous Welfare Effects of Forced Open Access: A Two-Sided Model' (2012) SSRN Working Papers Series <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2045956> accessed 13 June 2013; Yuqing Zheng and Harry M Kaiser, 'A Two-Sided, Empirical Model of the Submission and Subscription Markets for Economics Journals' (2011) SSRN Working Papers Series <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1919747> accessed 13 June 2013; Mark J McCabe and Christopher M Snyder, 'The Economics of Open-Access Journals' (2010) SSRN Working Papers Series <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=914525> accessed 13 June 2013; Doh-Shin Jeon and Jean-Charles Rochet, 'The Pricing of Academic Journals: A Two-Sided Market Perspective' (2010) 2 American Econ J: Microeconomics 222 <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1002910> accessed 16 March 2013; Glenn S McGuigan and Robert D Russell, 'The Business of Academic Publishing: A Strategic Analysis of the Academic Journal Publishing Industry and its Impact on the Future of Scholarly Publishing' (2008) 9(3) Electronic Journal of Academic and Special Librarianship <http://southernlibrarianship.icaap.org/content/v09n03/mcguigan_g01.html> accessed 13 June 2013; Mark J McCabe and Christopher M Snyder, 'Academic Journal Prices in a Digital Age: A Two-Sided Market Model' (2007) 7(1) The B E J of Econ Analysis & Policy Article 2 <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=914532> accessed 16 March 2013; McCabe and Snyder, 'Academic Journal Prices in a Digital Age' (n 566); Mark Armstrong, 'Competition in Two-Sided Markets' (2006) 37 Rand Journal of Economics 668, 668-91. See also See Solum, 'Download it While it's Hot' (n 351) 861-862 (discussing the role and functions performed by intermediaries, including screening, certification, dissemination, targeting, feedback).

⁵⁶⁵ See McGuigan and Russell, 'The Business of Academic Publishing' (n 564); Robin P Peek, 'Scholarly Publishing: Facing the New Frontier' in Robin P Peek and Gregory B Newby (ed), *Scholarly Publishing: The Electronic Frontier* (MIT Press 1996) 11.

⁵⁶⁶ See Mark McCabe and Christopher M Snyder, 'The Economics of Open-Access Journals' (2006) Working Paper <www.mccabe.people.si.umich.edu/EOAJ.pdf> accessed 16 January 2013.

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⁵⁶⁸ See McGuigan and Russell, 'The Business of Academic Publishing' (n 564).

channel the filtering task and package research into journals or other forms of publication and sell it back to the academic community. In summary, as Theodore Bergstrom noted, the academic community provides ‘free labour for costly journals.’⁵⁶⁹

Looking at these dynamics, Jessica Litman argued that law journal publishing in the United States is one of the easiest cases for OAP.⁵⁷⁰ All who participate in the research, writing, editing and publication process do so because of reputational incentives. In fact, copyright is very much irrelevant to legal scholars and students involved in law journal publishing. Again, the first copy cost of law reviews is heavily subsidised by the academic institution. Litman observes that law schools invest in the creation and publication of legal scholarship because they consider it to be part of their core mission, not because it is profitable. As Litman concludes, ‘that subsidy [. . .] is an investment in the production and dissemination of legal scholarship, whose value is unambiguously enhanced by open access publishing’.⁵⁷¹

3.2 ACADEMIC PUBLISHING INDUSTRY

The unusual economics of academic publishing have in fact evolved over time, reinforcing the perceived unfairness of the system only recently. For a long time since the creation of the *Philosophical Transactions* of the Royal Society of London by Henry Oldenburg in 1665, editors and publishers of scholarly journals have recuperated costs only.⁵⁷² Actually, the logic behind the custom of surrendering the scientific authors’ copyright for free in exchange for wide circulation of peer reviewed journals must also be viewed as a consequence of the need to cover those costs. Initially, high front-end publishing costs and the costs of distribution of physical copies induced scientific sub-communities to entrust learned societies with publication tasks. As authors have noted, scientific publication became an increasing source of revenue for learned societies, which started to outsource publishing services to commercial publishers in exchange for a share of the profits.⁵⁷³ Finally, the large prospects of profit led to the acquisition of the learned societies by the commercial publishers.⁵⁷⁴ As Jean-Claude Guéron has described, since the Institute of Scientific

⁵⁶⁹ See Theodore Bergstrom, ‘Free Labor for Costly Journals?’ (2001) 15 *J of Economic Perspectives* 183, 183-198.

⁵⁷⁰ Litman, ‘The Economics of Open Access Law Publishing’ (n 361).

⁵⁷¹ *Ibid* 779.

⁵⁷² See Guéron, *In Oldenburg’s Long Shadow* (n 44) 5-10.

⁵⁷³ See Reichman and Okediji, ‘When Copyright Law and Science Collide’ (n 431) 1460; McGuigan and Russell, ‘The Business of Academic Publishing’ (n 564).

⁵⁷⁴ See Reichman and Okediji, ‘When Copyright Law and Science Collide’ (n 431) 1460-1461; McGuigan and Russell, ‘The Business of Academic Publishing’ (n 564); Toby Miller, ‘Drowning in Information and Starving For Knowledge: 21st Century Scholarly Publishing’ (2007) 1 *Int’l J Comm* 123, 123-125 <<http://ijoc.org/lois/index.php/ijoc/article/viewFile/121/56>> accessed 13 June 2013; Katherine Thomes and Karen Clay, ‘University Libraries in Transition’ (1998) *ASEE Prism* 28.

Information (ISI) started defining 'core journals' from impact factors and citation counts through the Science Citation Index (SCI) in 1960, corporate publishers have increasingly gained control over those titles, while learned societies running those journals could capitalise on them.⁵⁷⁵ The introduction of citation indexes and the definition of core journals made the journal publishing market extremely inelastic, increasing the commercial publishers' capacity of raising prices as well as their expectations of large profit margins, as I will discuss in more details in the next paragraph.

Today, the scholarly publishing market can be said to be 'stratified' by being made up of three relatively distinct publishing economies: independent journals, scholarly/learned society publishers, and commercial publishers.⁵⁷⁶ In *The STM Report: An Overview of Scientific and Scholarly Journals Publishing*,⁵⁷⁷ Ware and Mabe point to how commercial publishers now constitute 64 per cent of the journals listed in the highly selective ISI Web of Science index.⁵⁷⁸ Again, according to McGuigan and Russell, in the STEM segment of academic journal publishing, the top ten publishers account for approximately 43 per cent of the total revenue.⁵⁷⁹ As mentioned by Lewis, 'today the annual value of the peer-reviewed journal market is estimated at £25 billion [\$50 billion], and consists of 23,700 journals, which among them publish 1.59 million articles a year.'⁵⁸⁰ Also, in discussing the scale of the industry for STEM journals, Mark Ware and Michael Mabe noted that the number of journals has grown at a rate of 3.5 per cent a year over the past two centuries.

⁵⁷⁵ See Guédon, *In Oldenburg's Long Shadow* (n 44) 19-28. See also Richard Edwards and David Shulenburger, 'The High Cost of Scholarly Journals (And What to Do About It)' (2003) 35(6) *Change* 10-19 (noting that the shift from non-profit and scholarly societies to commercial publishers took place during the 1960s and 1970s).

⁵⁷⁶ See John Willinsky, 'The Stratified Economics of Open Access' (2009) 39(1) *Economics Analysis and Policy* 53-57. For a discussion of scholarly publishers and university presses, with special emphasis on the challenges ahead and the future role of the universities in the scholarly publishing system, see Association of American University Presses (AAUP), Task Force on Economic Models for Scholarly Publishing, 'Sustaining Scholarly Publishing: New Business Models for University Presses' (AAUP 2011) <<http://www.uvasci.org/wp-content/uploads/2011/03/aaupbusinessmodels2011.pdf>> accessed 16 January 2013 (discussing emerging open access and paid business models for university presses and proposing a set of recommendations); Laura Brown, Rebecca Griffiths, and Matthew Rascoff, 'University Publishing in a Digital Age' (2007) 10(3) *JEP* <<http://quod.lib.umich.edu/i/jep/3336451.0010.301?rgn=main;view=fulltext>> accessed 23 January 2013 (assessment of university-based publishing and the future role of the university in the scholarly publishing system). See also 'Campus-Based Publishing Partnerships: A Guide to Critical Issues' (SPARC 2009) <<http://www.arl.org/sparc/partnering/guide>> accessed 23 January 2013.

⁵⁷⁷ Mark Ware and Michael Mabe, 'The STM Report: An Overview of Scientific and Scholarly Journals Publishing' (International Association of Scientific, Technical and Medical Publishers 2009) <http://www.stm-assoc.org/2009_10_13_MWC_STM_Report.pdf> accessed 1 June 2013.

⁵⁷⁸ See Web of Science <<http://thomsonreuters.com/web-of-science>> accessed 1 July 2013.

⁵⁷⁹ See McGuigan and Russell, 'The Business of Academic Publishing' (n 564). See also Lee C Van Orsdel and Kathleen Born, 'Periodical Price Survey 2005: Choosing Sides' (2005) 130(7) *Library Journal* 43, 43-48.

⁵⁸⁰ Lewis, 'Library Budgets, Open Access, and the Future of Scholarly Communication' (n 590) 271.

According to several authors, copyright monopoly and the shift of for-profit publishers into the academic journal market have led to a highly concentrated industry in which a handful of large firms increasingly control a substantial part of the market.⁵⁸¹ Mergers, especially horizontal mergers, have played an important role in the recent history of academic publishing, with the number of academic publishers becoming much more concentrated in recent years.⁵⁸² Today, the three largest publishers of scientific journals – Reed Elsevier, Taylor and Francis, and Springer Verlag – together control about 2,300 titles and 60 per cent of the scientific publishing market.⁵⁸³ As we will see later, the massive entrance of commercial publishers into the academic market had two-fold effects, which are somehow related: high concentration and price increases.

3.2.1 Pricing Models, Inelastic Demand and Market Inefficiency

Pricing models in the academic publishing industry have emerged as a critical issue in recent years.⁵⁸⁴ Print journals have traditionally obtained most of their revenues from subscription fees.⁵⁸⁵ In a study conducted in the United Kingdom in 2003, 83 per cent of academic journal

⁵⁸¹ See Giovanni Ramello, 'Copyright & Endogenous Market Structure: A Glimpse from the Journal-Publishing Market' (2010) 7(1) *Rev of Econ Research on Copyright Issues* 7-29.

⁵⁸² See Renée M Duplantis, 'Estimating and Predicting Merger Effects and Pass Through Rates' (PhD in Economics, Northeastern University 2010) (discussing in the first chapter the merger effect in the academic journal publishing industry); Mark J McCabe, 'Merging West and Thomson: Pro- or Anti-Competitive?' (2005) 97(3) *L Lib J* 423; Albert A Foer, 'Antitrust Perspectives on Mergers in the Academic Publishing Industry' (The Information Access Alliance and the American Antitrust Institute Invitational Symposium on Antitrust Issues in Scholarly and Legal Publishing, Washington D.C., 11 February 2005) 3 <http://www.antitrustinstitute.org/recent2/377.pdf> (mentioning that the top ten STEM publishers account for 63.4% of the industry revenues, with the three largest commercial publishers accounting for 45.3% of the industry revenues); Albert A Foer, 'Can Antitrust Save Academic Publishing?' (American Library Association Annual Meeting, Orlando, Florida, 28 June 2004) <<http://www.informationaccess.org/bm~doc/Bert.pdf>> accessed 12 June 2013. The Information Access Alliance (IAA) was formed with the precise goal of pushing for revised analysis of publisher mergers. See Information Access Alliance <<http://www.informationaccess.org>> accessed 12 June 2013. IAA has reacted to this concentration by filing a Statement with the DOJ and the FTC for anti-competitive conduct. See 'Statement by Thomas M Susman On Behalf of the Information Access Alliance Prepared for the U.S. Department of Justice and Federal Trade Commission Hearings on Single-Firm Anticompetitive Conduct' (Washington D.C., November 2006) <http://www.informationaccess.org/bm~doc/iaa_doj_ftc.pdf> accessed 12 June 2013. See also Thomas M Susman and David J Carter, 'Information Access Alliance, Publisher Mergers: A Consumer-Based Approach To Antitrust Analysis' (Information Access Alliance 2003) <http://www.arl.org/storage/documents/publications/iaa-publisher-mergers-jun03.pdf> accessed 12 June 2013 (describing the issues that have emerged as the industry has become increasingly concentrated and advocating for a new standard of antitrust review to be adopted by state and federal antitrust enforcement agencies in examining merger transactions in the serial publishing industry).

⁵⁸³ See Contreras, 'Data Sharing, Latency Variables, and Science Commons' (n 162) 1652-1655.

⁵⁸⁴ See Donald W King and Frances M Alvarado-Albertorio, 'Pricing and Other Means of Charging Scholarly Journals: A Literature Review and Commentary' (2008) 21(4) *Learned Publishing* 248.

⁵⁸⁵ See McCabe and Snyder, 'Academic Journal Prices in a Digital Age' (n 564) (studying the division of fees between authors and readers in different market conditions and explaining why print journals traditionally obtained most of their revenues from subscription fees).

income came from subscriptions and only a negligible 5 per cent came from advertising, in sharp contrast to commercial news.⁵⁸⁶ This emphasis on the subscription revenues as the main business model for traditional academic publishing appears to be closely connected with the targeted consumer base of academic publishers. Non-OA academic publishing traditionally looks to libraries to define its consumer. In this respect, as authors have noted, there is a switch in focus on the user base of traditional and OA publishing. In contrast to non-OA academic publishing, OA publishing places a special emphasis on individual consumers, researchers and authors.⁵⁸⁷

As we have already mentioned in Part I of this study discussing the origins and motivations of the OAP movement, this pricing subscription model has increasingly raised concerns and discontent in the academic community. This discontent has been caused by a phenomenon called the 'serial crisis' of ever-rising costs of journals,⁵⁸⁸ which has forced libraries to cancel a steadily increasing number of subscriptions, limiting the access of the scholarly community to important scientific literature.⁵⁸⁹ In recent years, actually, scientific journal prices have

⁵⁸⁶ Economic Analysis of Scientific Research Publishing (Wellcome Trust 2003) 13 as cited in Gabe Bloch, 'Transformation in Publishing: Modeling the Effect of New Media' (2005) 20 Berkeley Tech. L J 647

⁵⁸⁷ Leslie A Harmel, 'The Business and Legal Obstacles to the Open Access Publishing Movement for Science, Technical, and Medical Journals' (2005) 17 Loy Consumer L Rev 555, 556.

⁵⁸⁸ See, on the 'serial crisis', Matthew White, 'What is the Future Role of the Publisher? A Literature Review of Attitudes Towards and Alternative Publishing Model' (MSc/MA in Library and Information Studies thesis, City University London 2011) 16-18; McGuigan and Russell, 'The Business of Academic Publishing' (n 564); Judith M Panitch and Sarah Michalak, 'The Serials Crisis: A White Paper for the UNC-Chapel Hill Scholarly Communications Convocation' (January 2005) <www.unc.edu/scholcomdig/whitepapers/panitch-michalak.doc> accessed 13 June 2013; Nentwich, '(Re-)De-Commodification in Academic Knowledge Distribution?' (n 41) 23-25; Guedon, *In Oldenburg's Long Shadow* (n 44) 23-35; Hans E Roosendaal and Peter A Geurts, 'Forces and functions in scientific communication: an analysis of their interplay' (1997) Cooperative Research Information Systems in Physics <<http://doc.utwente.nl/60395/1/Roosendaal97forces.pdf>> accessed 13 June 2013 ; Sandra Whisler and Susan F Rosenblatt, 'The Library and the University Press: Two Views of the Costs and Problems of the Current System of Scholarly Publishing' (Andrew W. Mellon Foundation Conference 'Scholarly Communication and Technology', Emory University, 24-25 April 1997) <<http://www.eric.ed.gov/PDFS/ED414921.pdf>> accessed 13 June 2013; Ken Rouse, 'The Serials Crisis in the Age of Electronic Access' (1997) 1(11) *Informatie Professional* 17 <<http://igitur-archive.library.uu.nl/DARLIN/2005-0520-200522/Rouse%2011.97.pdf>> accessed 13 June 2013 ; Anne M Pascarelli, 'Coping Strategies for Libraries Facing the Serials Crisis' (1990) 16(1) *Serials Review* 75.

⁵⁸⁹ As McGuigan and Russell explained, the 'serial crisis' is also the effect of the interaction between three giant oligopolistic companies and the fragmentation of the market into over 2,000 smaller companies, which can be accounted for by the increasing specialisation within each academic discipline. This dynamic has added to the 'serial crisis' because the smaller journals have fewer subscribers and, as a consequence, higher cost per issue. See McGuigan and Russell, 'The Business of Academic Publishing' (n 564). Okerson clarified this point by noting that '[i]n view of the increasing size of the periodicals universe (and the increasing specialization in journals), the relatively fixed materials-and-binding budgets at libraries have resulted in decreasing numbers of subscriptions per title. Prices per title increase further, and the vicious cycle continues'. Ann Okerson, 'University Libraries and Scholarly Communication' in Robin P Peek and Gregory B Newby (ed), *Scholarly Publishing: The Electronic Frontier* (MIT Press 1996) 190.

grown faster than both inflation and the growth of library budgets.⁵⁹⁰ Summing up the terms of the problem, the European Commission noted in 2007 that

over the last twenty years, journal subscription prices have on average increased above inflation level - according to one study 4.5% per year above inflation - while there are considerable differences according to disciplines and journals. This has put publicly funded libraries, their main clients, under financial pressure and led to subscription cancellations in certain cases.⁵⁹¹

Price increases have been primarily a consequence of the inelasticity of the academic publishing market. As McCabe noted, in the academic publishing market a non-substitutable good with inelastic demand is subject to commercial exploitation because of the exclusivity principle of copyright.⁵⁹² The inelastic demand – which stands at the advantage of the seller – is a consequence of a mix of prestige and specialisation that makes many academic

⁵⁹⁰ See David W Lewis, 'Library Budgets, Open Access, and the Future of Scholarly Communication: Transformations in Academic Publishing' (2008) 69(5) College & Research Libraries News 271 <<http://crln.acrl.org/content/69/5/271.full.pdf+html>> accessed 28 May 2013 (noting that 'the cost of scholarly journals has increased at 10 percent per year for the last three decades. This is over six times the rate of general inflation and over two-and-a-half times the rate of increase of the cost of health care. Between 1975 and 2005 the average cost of journals in chemistry and physics rose from \$76.84 to \$1,879.56. In the same period, the cost of a gallon of unleaded regular gasoline rose from 55 cents to \$1.82. If the gallon of gas had increased in price at the same rate as chemistry and physics journals over this period it would have reached \$12.43 in 2005, and would be over \$14.50 today'); Oppenheim, 'Electronic Scholarly Publishing and Open Access' (n 220) 577 (noting that 'in the UK, it has been estimated that between 1998 and 2003 the average price of an academic journal rose by 58%, while the UK retail price index rose by 11% in the same period'); Carol Tenopir and Donald W King, 'Scholarly Journal and Digital Database Pricing: Threat or Opportunity?' in Jeffrey Mackie-Mason and W Lougee (eds), *Bits and Bucks: Economics and Usage of Digital Collections* (MIT 2004) <http://web.utk.edu/~tenopir/eprints/database_pricing.pdf> accessed 21 May 2013; Ruth H Miller, 'Electronic Resources and Academic Libraries, 1980-2000: A Historical Perspective' (2000) 48 Library Trends 645, 645-671 <https://www.ideals.illinois.edu/bitstream/handle/2142/8303/librarytrendsv48i4c_opt.pdf?sequence=1> accessed 16 January 2013.

⁵⁹¹ Commission, 'Communication on Scientific Information in the Digital Age: Access, Dissemination and Preservation' (Communication) COM (2007) 56 final, 3.2 <<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2007:0056:FIN:EN:PDF>> accessed 13 June 2013. See also Mathias Dewatripont and others, *Study on the Economic and Technical Evolution of the Scientific Publication Markets in Europe* (European Communities 2006) 5 <http://ec.europa.eu/research/science-society/pdf/scientific-publication-study_en.pdf> accessed 12 June 2013 (noting that '[i]n the last 30 years, the prices of scientific journals have been steadily increasing. Between 1975 and 1995, they increased 200%-300% beyond inflation. This was accompanied by a fall in subscriptions both by individual researchers and by libraries whose budgets got squeezed. Indeed, journal prices far outpaced the evolution of library budgets, which did increase at a somewhat slower pace than total academic research budgets').

⁵⁹² See McCabe, 'Information Goods and Endogenous Pricing Strategies: The Case of Academic Journals' (2004) 12(10) Economics Bulletin 1; see also Hilty and others, 'European Commission: Green Paper: Copyright in the Knowledge Economy' (n 511) 314 (noting that scientific information lacks substitutability 'since users thrive on a comprehensive set of pre-existing information' because deficits in the mapping of previous knowledge may undermine the success of a research project; therefore 'the lack of substitute goods severely diminishes competition between information providers').

journals a non-substitutable good.⁵⁹³ Recognising the relative inelasticity of both supply and demand, the commercial publishers 'acquired top-quality journals, and then dramatically raised prices, expecting that they would lose relatively little of the market'.⁵⁹⁴ In fact, according to Bergstrom and Bergstrom, commercial publishers have charged three to nine times more than society publishers.⁵⁹⁵ Taking these considerations into account, the European Commission 'Study on the economic and technical evolution of the scientific publication markets in Europe' of 2006 has concluded that journal markets do not function properly because they lack sufficient competition and allow for a 'significant amount of discretion in the setting of journal prices'.⁵⁹⁶

The price increase has also been exacerbated by the high market concentration, mergers and acquisitions within the publishing industry, with a handful of companies owning most of the research articles indexed in the world's leading citation indexes.⁵⁹⁷ Significant price increases seem to result after the mergers, such as in the case of Thomson Corporation and West Publishing Company in the legal publishing market, or Reed Elsevier purchasing Pergamon and later Harcourt in the biomedical field.⁵⁹⁸ Recurrently, when small publishing

⁵⁹³ Ibid. See also Armbruster, 'Open Access in Social and Cultural Science' (n 278) 429. See also Hilty and others, 'European Commission: Green Paper: Copyright in the Knowledge Economy' (n 511) 314-315 (stressing this point and noting that the inefficient competition of the scholarly publishing market 'follows from the distinct, impact-driven publishing system inseparably linked to the reputation of scientific authors which is pre-eminent in today's science and research').

⁵⁹⁴ Edwards and Shulenburger, 'The High Cost of Scholarly Journals' (n 575) 14.

⁵⁹⁵ See Carl T Bergstrom and Theodore C Bergstrom, 'The Costs and Benefits of Library Site Licenses to Academic Journals' (2004) 101(3) PNAS 897, 897 <www.pnas.org/cgi/doi/10.1073/pnas.0305628101> accessed 11 June 2013 (noting also, as for quality, that citation, as a measure of reputation, could cost ten times more with commercial publishers).

⁵⁹⁶ Dewatripont and others, *Study on the Economic and Technical Evolution of the Scientific Publication Markets in Europe* (n 591) 40.

⁵⁹⁷ See McGuigan and Russell, 'The Business of Academic Publishing' (n 564) (reporting that estimates indicate that the three dominant players account for approximately 42% of all journal articles published); Morgan Stanley, 'Media Industry Overview: Scientific Publishing: Knowledge is Power' (*Equity Research Report Europe*, 30 September 2002). See also, for a comprehensive discussion of the impact of publishers' mergers on journal prices, Mark J McCabe, 'The Impact of Publisher Mergers on Journal Prices: Theory and Evidence' (2001) 40(1/2) *The Serials Librarian* 157, 157-166 <<http://mccabe.people.si.umich.edu/Serialslibrarian.pdf>> accessed 16 May 2013; Mark J McCabe, 'The Impact of Publisher Merges on Journal Prices: An Update' in Association of Research Libraries, *Bimonthly Report* 207 (December 1999) <<http://mccabe.people.si.umich.edu/Grain.PDF>> accessed 16 May 2013; Mark J McCabe, 'The Impact of Publisher Mergers on Journal Prices: A preliminary Report' (The Newsletter of the Association of Research Libraries, October 1998). For additional sources on mergers in the academic publishing sector, see 'Merger Mania' (2003) 7(5) *Scholarly Communication Reports* 2, 2-4; Carolyn E Lipscomb, 'Mergers in the Publishing Industry' (2001) 89(3) *Bull Med Libr Assoc* 307, 307-308.

⁵⁹⁸ See Harmel, 'The Business and Legal Obstacles to the Open Access Publishing Movement For Science, Technical, and Medical Journals' (n 587) 563; Mark J McCabe, 'Journal Pricing and Mergers: A Portfolio Approach' (2002) 92(1) *Am Econ Rev* 259; Susman and Carter, 'Information Access Alliance, Publisher Mergers' (n 582) 4 (reporting that, in the biomedical field, significant price increases resulted after ten of eleven publisher mergers in the past decade).

companies or journals are purchased by large commercial companies, price increases follow as a consequence.⁵⁹⁹

Together with pricing, bundling has increased dramatically in the academic publishing market over the past years.⁶⁰⁰ Many libraries acquire their subscriptions to journals from major academic publishers under so-called 'Big Deal' contracts, which may create strategic barriers to entry into markets for journals.⁶⁰¹ 'Big deals' in fact push smaller, independent and not-for-profit publishers out of the market because libraries no longer have funds to acquire additional titles after signing a big deal.⁶⁰² As Armbruster noted, if libraries form consortia to negotiate discounted deals or independent publishers opt to collaborate to offer smaller big deals, this only reinforces the logic of the 'big deal' and mergers and acquisitions.⁶⁰³ However, Armstrong has argued that non-profit journals should not necessarily abandon big deals – or collection sales programmes. Instead, they should withdraw from commercial publishers that are distributing their own for-profit journals, and join together to be distributed by a publishing consortium setting relatively low prices for their collections.⁶⁰⁴ Along similar lines, in order to minimise the anticompetitive effects of bundling on small and scholarly society publishers, Crow has proposed forming publishing cooperatives among scholarly societies.⁶⁰⁵ Willinsky has taken Crow's proposal a step further

⁵⁹⁹ See, e.g., 'The Impact of Publisher Mergers on Journal Prices: An Update' (n 597) 5 (noting that after Reed Elsevier acquired Pergamon Press, there was a resulting price increase of 22% for Pergamon press journals and 8% for Reed Elsevier journals).

⁶⁰⁰ See, discussing generally bundling practices and competition in the academic publishing market between libraries and publishers, and also highlighting both positive and negative effects of bundling or 'big deals', Andrew Odlyzko, 'Open Access, Library and Publisher Competition, and the Evolution of General Commerce' (2013) U Minnesota Working paper Series <<http://www.dtc.umn.edu/~odlyzko/doc/libpubcomp.pdf>> accessed 1 July 2013.

⁶⁰¹ See Aaron Edlin and Daniel L Rubinfeld, 'Exclusion or Efficient Pricing? The 'Big Deal' Bundling of Academic Journals' (2004) 172 (1) Antitrust L J 128, 128-159; Doh-Shin Jeon and Dominico Menicucci, 'Bundling Electronic Journals and Competition Among Publishers' 2006 4(5) J of the European Economic Association 1038, 1038-1083. See also Caso, 'Scientific Knowledge Unchained' (n 439) 11. But see Rick Warren-Boulton and others 'Have Big Deal Contracts Prevented Entry by Small Publishers of Academic Journals?' (The 6th Annual International Industrial Organization Conference, 17 May 2008) <https://editorialexpress.com/cgi-bin/conference/download.cgi?db_name=IIOC2008&paper_id=577> accessed 12 June 2013 (noting that in the scientific journal publishing industry, 'it would seem unlikely that either the rationale for, or a significant effect of, bundling could be to raise barriers to entry').

⁶⁰² See Willinsky, 'The Stratified Economics of Open Access' (n 576) 63; David C Prosser, 'Between a Rock and a Hard Place: the Big Squeeze for Small Publishers' (2004) 17 Learned Publishing 17, 17-22 <http://www.ingentaconnect.com/content/alpsp/lp/2004/00000017/00000001/art00004> accessed 1 July 2013.

⁶⁰³ See Armbruster, 'Open Access in Social and Cultural Science' (n 278) 431.

⁶⁰⁴ See Mark Armstrong, 'Collection Sales: Good or Bad for Journals?' (2010) 48(1) Economic Inquiry 163, 163-176 <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1542280> accessed 25 June 2013.

⁶⁰⁵ Raym Crow, 'Publishing Cooperatives: An Alternative for Non-Profit Publishers' (2006) 11(9) First Monday www.firstmonday.org/article/view/1396/1314 accessed 1 July 2013.

by envisaging the possibility for societies to form publishing cooperatives with research libraries.⁶⁰⁶

In reviewing the rapid shift from a paper-based system to one of predominantly electronic distribution,⁶⁰⁷ Bergstrom and Bergstrom have noted that bundled and tiered pricing structures have largely applied to academic publishing in electronic form.⁶⁰⁸ First, the sales of the electronic versions are often bundled with the sales of the print journals. Again, publishers use tiered pricing structures to sell their electronic journals, charging large university libraries substantially more than smaller institutions.⁶⁰⁹ This price-discrimination scheme allows a publisher to set prices by determining the amount a purchasing library is willing to pay, rather than setting prices based on the production costs of the product. In any event, in cases where electronic-only subscription packages have been made available, these are often sold at a price that is almost equivalent to the price of the print journals.⁶¹⁰

The pricing model implemented by the academic publishing industry has led to very large gross margins for the publishers. As McGuigan and Russell have noted, commenting on Elsevier's profit margins as an example, the academic publishing industry 'reveals unusually high figures rarely found for firms in other industries'.⁶¹¹ According to Björk, the profitability of several major publishers has also steadily increased in recent years, with Elsevier increasing its profit margins from 31 per cent to 37 per cent between 2005 and 2011, Taylor & Francis from 25 per cent to 36 per cent and Wolters Kluwer from 16 per cent to 20 per cent in the same period, with the highest profitability reached by John Wiley STEM, which

⁶⁰⁶ See Willinsky, 'The Stratified Economics of Open Access' (n 576) 64.

⁶⁰⁷ See Ware and Mabe, 'The STM Report' (n 577) 52 (reporting that 90% of journals in all academic areas are now online). But see, discussing the e-journal market, although market conditions may have been changed in part in the last few years, Caroline Christiansen, 'Electronic Law Journals' (2002) 30 Int'l J of L Info 337 (querying why electronic law journals have failed to grow at the pace experienced in other disciplines and examining two major obstacles to development of electronic law journals: the legal publishing market and the complexity of legal information published by various commercial, academic, governmental, and judicial institutions).

⁶⁰⁸ Bergstrom and Bergstrom, 'The Costs and Benefits of Library Site Licenses to Academic Journals' (n 595) 898.

⁶⁰⁹ Ibid 898-899.

⁶¹⁰ Kling and Callahan, 'Electronic Journals, the Internet and Scholarly Communication' (n 177) 11-13 (discussing cost and pricing of e-journals). See also, on pricing of e-journals, Theodore C Bergstrom, 'Pricing and Cost of Electronics Journals: Response from Theodore Bergstrom' (2002) 16(4) J of Econ Perspectives 232; Joop Dirkmaat, 'Pricing and Cost of Electronics Journals: Response from Joop Dirkmaat' (2002) 16(4) J of Econ Perspectives 227; Robert E Kohn, 'Pricing and Cost of Electronics Journals: Response from Robert Kohn' (2002) 16(4) J of Econ Perspectives 230

⁶¹¹ See McGuigan and Russell, 'The Business of Academic Publishing' (n 564) reporting data from UK Competition Commission, 'Reed Elsevier Plc and Harcourt General, Inc: A Report on the Proposed Merger' (Competition Commission 2001) <http://www.competition-commission.org.uk/rep_pub/reports/2001/457reed.htm#full> accessed 13 June 2013 and Risk Management Association, *Annual Statement Studies: 2001-2002* (Risk Management Association 2001) 977.

has increased its profit margins from 39 per cent to 43 per cent between 2008 and 2011.⁶¹² Similarly, a Wellcome Trust study found that gross margins in the academic journal industry reached 38 per cent with production cost accounting for 58 per cent and postage and distribution cost accounting for 8 per cent.⁶¹³

According to the International Association of STM Publishing, the high fees charged and related high profit margins follow from the value that they add to the articles they publish.⁶¹⁴ As a first explanation of the value they add, the publishers mention ‘the collective investment of hundreds of millions of euros in electronic developments’.⁶¹⁵ In this respect, publishers have claimed price increases due to the transition to electronic publishing. In fact, as Dewatripont and others have shown, this transition cannot be held responsible for the high journal prices at the core of the serial crisis because, referring to McCabe, they note that ‘price increases were substantial during the period 1988-2001 and could be partly traced to previous merger activity’.⁶¹⁶ Again, other explanations for the added value produced by academic publishers include ‘editorial management systems which facilitate online peer review’, the cost of substantive editing and preparing illustrations or special graphics as well as the additional review management costs for those journals that have a very high rejection rate, since the published articles must bear the costs of handling those that are rejected.⁶¹⁷ In order to support the value of its business model, the International Association of STEM Publishing also points out that ‘profits are a major source of reinvestment and innovation’ and ‘society publishers frequently use surpluses from journals to support other activities’,⁶¹⁸ and that they make ‘investments in the development of new journals around which emerging scientific communities seek to coalesce’.⁶¹⁹

In fact, the added value provided by the publishers, which they claim as a justification for the extraordinarily high fees charged, is minimal according to a study written by the

⁶¹² See Björk, ‘Open Access’ (n 484) 9.

⁶¹³ Ibid.

⁶¹⁴ See International Association of Scientific, Technical and Medical Publishing, ‘An Overview of Scientific, Technical and Medical Publishing and the Value It Adds to Research Outputs’ (April 2008) 6-8 <http://www.stm-assoc.org/2008_04_01_Overview_of_STM_Publishing_Value_to_Research.pdf>, accessed November 25, 2008.

⁶¹⁵ Ibid 7.

⁶¹⁶ Dewatripont and others, *Study on the Economic and Technical Evolution of the Scientific Publication Markets in Europe* (n 591) 43.

⁶¹⁷ International Association of Scientific, Technical and Medical Publishing, ‘An Overview of Scientific, Technical and Medical Publishing and the Value It Adds to Research Outputs’ (n 614) 8.

⁶¹⁸ Ibid.

⁶¹⁹ Ibid 6.

Deutsche Bank.⁶²⁰ Due to this minimal added value, the Deutsche Bank's study concludes, academic publishers, such as Reed Elsevier, make astronomical operating-profit margins close to 40 per cent.⁶²¹ They do so because, regardless of the real amount of value publishers add to the research output, they still provide less value to the final product than the authors but retain all the exclusive rights in it, together with the monopolistic market advantage that those rights provide. In this respect, as Suber has noted, 'publishers deserve to be paid for the value they add. But it doesn't follow that they deserve to control access or that they deserve a package of exclusive rights that bars author-initiated OA'.⁶²²

In light of the economics of academic publishing discussed earlier, pricing models and profitability of journal publishers, Reichman and Okediji have argued that 'science publishers are the main pecuniary beneficiaries of the current state of the law, which they have lobbied hard to obtain, and they would resist any reforms likely to be put on the table'.⁶²³ In a similar fashion, referring to EU experience, Hilty argues that copyright law rather protects the publishing industry than the creators.⁶²⁴ Therefore, Willinsky highlights the point that 'what is missing from the current economics of open access is a more exact accounting for pricing differences' from commercial publishers and other academic publishers.⁶²⁵ After considering the explanations from the commercial STEM publishers for their pricing regimes, Willinsky concludes that they fail to provide 'any acknowledgment that these same publishing services are being provided at far less cost by the academic community itself'.⁶²⁶ In particular, Willinsky wonders 'why [these pricing differences] should be sustained'.⁶²⁷ The final question is, then, for Willinsky, whether there is any positive proof

⁶²⁰ Deutsche Bank AG, 'Reed Elsevier: Moving the Supertanker. Company Focus: Global Equity Research Report' (January 11, 2005) (noting that '[i]n justifying the margins earned, the publishers, REL [Reed Elsevier] included, point to the highly skilled nature of the staff they employ (to pre-vet submitted papers prior to the peer review process), the support they provide to the peer review panels, including modest stipends, the complex typesetting, printing and distribution activities, including Web publishing and hosting. REL employs around 7,000 people in its Science business as a whole. REL also argues that the high margins reflect economies of scale and the very high levels of efficiency with which they operate. We believe the publisher adds relatively little value to the publishing process. We are not attempting to dismiss what 7,000 people at REL do for a living. We are simply observing that if the process really were as complex, costly and value-added as the publishers protest that it is, 40% margins wouldn't be available.') as cited in McGuigan and Russell, 'The Business of Academic Publishing' (n 564).

⁶²¹ Ibid. See also Monbiot, 'Academic Publishers' (n 193).

⁶²² Peter Suber, 'Balancing Author and Publisher Rights' (2007) 110 SPARC Open Access Newsletter <<http://legacy.earlham.edu/~peters/fos/newsletter/06-02-07.htm>> accessed 4 July 2013.

⁶²³ See Reichman and Okediji, 'When Copyright Law and Science Collide' (n 431) 1428.

⁶²⁴ Reto Hilty, 'Copyright Law and Scientific Research' in Paul Torremans (ed), *Copyright Law: A Handbook of Contemporary Research* (Edward Elgar 2007).

⁶²⁵ Willinsky, 'The Stratified Economics of Open Access' (n 576) 66.

⁶²⁶ Ibid.

⁶²⁷ Ibid.

that monopolies granted to publishers by authors transferring copyright to them, which those pricing differences keep in place, can be said to promote progress to the greatest extent now made possible by technological advancement.⁶²⁸

3.3 DIGITISATION AND OAP

The Internet, dematerialisation and digitisation have substantially changed the market conditions that gave life to the traditional models of scientific publishing. Desktop publishing and automated formatting, in fact, have massively reduced the costly front-end publishing function. Meanwhile, the Internet and digitisation have reduced distribution costs to zero, making physical copy distribution potentially redundant. A move to an electronic-only environment and the abandonment of print publication have been subjects of discussion, under the assumption that the retention of both printed and e-journal formats adds unnecessary costs to the supply chain from publishers to library and users.⁶²⁹ Examining the most relevant barriers to a full move to the e-only environment in the United Kingdom, in a report commissioned by the Research Information Network, Cox and Cox have identified publishers' pricing policies combining print and online versions of journals in a single price and the imposition of VAT on e-journals.⁶³⁰ In fact, objections to ending print publication have also been based by some commentators on the argument that paper retention should be considered as a superior form of permanent storage medium.⁶³¹

Digitisation and Internet distribution have enabled easy OAP, while making the services of traditional publishing houses less indispensable.⁶³² Therefore, following the so-called 'digital

⁶²⁸ Ibid 66-67.

⁶²⁹ See John Cox and Laura Cox, 'E-only scholarly Journals: Overcoming the Barriers' (Research Information Network 2010) <<http://www.rin.ac.uk/our-work/communicating-and-disseminating-research/e-only-scholarly-journals-overcoming-barriers>> accessed 15 June 2013. See also Durham Statement on Open Access to Legal Scholarship (n 342) (calling for the abolition of print publication); Danner, Leong and Miller, 'The Durham Statement Two Years Later' (n 344) (noting that little progress towards all-electronic publication has been seen).

⁶³⁰ See Cox and Cox, 'E-only scholarly Journals' (n 629) 20-25.

⁶³¹ This argument has been raised as one of the major objections to the call in the Durham Statement to end print publication. See Margaret A Leary, 'A Response to the Durham Statement Two Years Later' (2011) 103 *Law Libr. J.* 281. See also Judith Cobb and Joan Allen-Hart, 'Preserving Legal Materials in Digital Formats' (Legal Information Preservation Alliance 2005) 11-13 <http://www.aallnet.org/lipa/LIPA_White_Paper_Final.pdf> accessed 1 June 2013 (discussing the risk factors for digital materials, including storage media obsolescence, software obsolescence, organisational and cultural challenges, focus on access without addressing issues of preservation).

⁶³² See Reichman and Okediji, 'When Copyright Law and Science Collide' (n 431) 1462-1463 (discussing the changed role of intermediaries in the digital society); Willinsky, 'The Stratified Economics of Open Access' (n 576) 58; Armbruster, 'Open Access in Social and Cultural Science' (n 278) 431; Hilty, 'Five Lessons About Copyright in the Information Society' (n 442) 120-121; Michael Nentwich, 'Cyberscience. Modelling ICT-induced

revolution', the role of intermediaries in the academic publishing market – as in fact in most creative industries – has been put under scrutiny.⁶³³ In early discussions about the Internet and its impact on publishing, what dominated was the potential 'liberation' from the existing intermediaries. However, there seems to be agreement in the literature that the perceived disintermediation may be only apparent. According to Michael Carroll, for example, 'after the revolutionary euphoria died down . . . many acknowledged that intermediaries are necessary to all kinds of transactions in commerce, culture, and news. Reintermediation soon follows from disintermediation, and the real question the Internet posed was not whether intermediaries are necessary but what kinds of intermediaries are necessary.'⁶³⁴ Discussing legal scholarship, Solum reinforces this point and notes that it is not exactly correct that the new world of legal scholarship is about disintermediation '[b]ecause there are new intermediaries and the old ones haven't gone away'.⁶³⁵ In connection with the new role that intermediaries may take in the foreseeable future, Paul Peters has noted that OA may lead to a major change in the scholarly publishing industry. A widespread shift from subscription-based models to an OA model based on publication charges may transform the fundamental nature of the scholarly publishing industry from that of a content-providing industry to a service-providing industry.⁶³⁶

As Willinsky – echoing the conclusions of many other authors – has noted, 'there is a growing recognition within the academic community that 'open access' to research and scholarship can increase its value and reach'.⁶³⁷ Besides an almost monolithic literature recognising the value of OAP, this conclusion has been confirmed by a large-scale survey on attitudes of researchers towards OAP run by the Study for Open Access Publishing (SOAP) project. The survey – collecting responses from more than 40,000 researchers – has shown overall support for the idea of OA, with a slightly more favourable opinion in the social sciences and humanities (90 per cent) than the scientific and engineering field (80 per cent).⁶³⁸ Together with the threats posed by the 'serial crisis', much of the support of the

Changes of the Scholarly Communication System' (2006) 8(4) *Information, Communication & Society* 452, 542-560.

⁶³³ See, for example, Solum, 'Download it While it's Hot' (n 351) 861-862 (broadly discussing the role of old and new intermediaries with specific emphasis on legal academic publishing).

⁶³⁴ Michael W Carroll, 'Creative Commons and the New Intermediaries' (2005) 45(1) *Michigan State L Rev* 1, 1.

⁶³⁵ Solum, 'Download it While it's Hot' (n 351) 858.

⁶³⁶ See Paul Peters, 'Redefining Scholarly Publishing as a Service Industry' (2007) 10(3) *JEP* <<http://quod.lib.umich.edu/cgi/t/text/text-idx?c=jep;view=text;rgn=main;idno=3336451.0010.309>> accessed 23 January 2013.

⁶³⁷ Willinsky, 'The Stratified Economics of Open Access' (n 576) 53.

⁶³⁸ See Dallmeier-Tiessen and others, 'Highlights from the SOAP Project Survey. What Scientists Think About Open Access Publishing' (2011) <<http://arxiv.org/abs/1101.5260v2>> accessed 1 July 2013. These highlights on researchers' attitude towards OAP are part of a larger Study for Open Access Publishing (SOAP) project carried out by a miscellaneous array of scientists, academic researchers, traditional and OA publishers. The study has compiled a large amount of data on the present state of OAP in online peer-reviewed articles. The SOAP has

academic community for OAP models seems to be framed within a reactionary movement to traditional publishing models turning academic research outputs into a commodity.⁶³⁹ Even when directly performing a publishing function, as in the case of scholarly society publishers and university presses, the academic community still seems to strongly favour the emergence of OAP models. In a 2011 report prepared by the Task Force on Economic Models for Scholarly Publishing of the Association of American University Presses (AAUP), for example, the authors of the report have stressed that OA should be a principle to be embraced if the publishing cost can be supported by the larger scholarly enterprise.⁶⁴⁰

Reichman and Okediji have reconsidered ‘the wisdom of continuing to rely on proprietary publishing intermediaries in an environment increasingly characterized by an array of promising open access options’ and concluded that ‘the best outcome for the future of scientific research may well be for the scientific community itself to take responsibility for managing the conditions under which its own knowledge assets will be created and deployed’.⁶⁴¹ Jessica Litman has qualified this point even further. For Litman, any analysis of the economics of scholarly publishing should focus on the economics of academic research at large rather than the budgets of journals propagating its results. In light of the fact that publication costs are minimal if compared with global expenditure on research, OAP is likely to have only an insignificant impact on the cost of generating and disseminating research. It may only require research centres to shift expenditures from one entry to the other. Therefore, regardless of whether OAP generates any significant cost savings, making research more accessible ‘seems likely to improve the quality of scholarly research across the board, and seems worth doing on those grounds alone’.⁶⁴²

derived and discussed several results from the dataset, together with their correlations, including the number of OA journals and articles, their subject area, the starting date of open access journals, the size and business models of open access publishers, the licensing models, the presence of an impact factor, the uptake of hybrid OA. In addition, a number of qualitative features of OAP, relevant to understanding the present landscape, are also described. See Suenje Dallmeier-Tiessen and others, ‘Open Access Publishing - Models and Attributes’ (Max Planck Digital Library, Study of Open Access Publishing (SOAP) 2010) <<http://edoc.mpg.de/478647>> accessed 1 June 2013.

⁶³⁹ See Nentwich, ‘(Re-)De-Commodification in Academic Knowledge Distribution?’ (n 41) 21 (arguing that we have recently seen ‘an increasing awareness of the research community that its products should not be treated as a commodity, but should instead be freely available to the whole community’). See also Michael Gibbons and Björn Wittrock (eds), *Science as a Commodity: Threats to the Open Community of Scholars* (Longman 1985).

⁶⁴⁰ AAUP, ‘Sustaining Scholarly Publishing’ (n 576) 11.

⁶⁴¹ Reichman and Okediji, ‘When Copyright Law and Science Collide’ (n 431) 1371-1372. See also Brown, Griffiths, and Rascoff, ‘University Publishing in a Digital Age’ (n 576) 4-5 (making ‘the case that universities should become more actively involved in publishing scholarship’).

⁶⁴² Litman, ‘The Economics of Open Access Law Publishing’ (n 361) 795.

In fact, although identified as the main target of the OAP movement's discontent, commercial publishers are also showing increasing interest in the academic OAP market,⁶⁴³ with special emphasis on business models based on the payment of a processing fee by the authors or their supporting institutions. Commercial publishers, despite only a marginal presence a decade ago, have grown to become key actors on the OA scene, responsible for 120,000 of the articles published in 2011.⁶⁴⁴ However, as Björk suggested, the entry of traditional publishers into the OAP market has been very much on a small experimental risk-free scale, because in fact traditional publishers' operating profit margins have been fluctuating between 30 per cent and 40 per cent for the last fifteen years and do not seem to be in peril at the moment.⁶⁴⁵ Again, the repercussion of journal cancellations by libraries, because of an increase in OA materials, will still take some time to be felt by traditional publishers due to the fact that all the 'big deals' e-licences are usually multi-year deals.⁶⁴⁶

3.4 OPEN ACCESS BUSINESS MODELS

As we will describe in the next few pages, a vast number of possible business models have been tested in the past decade in search of sustainable solutions for OAP ventures.⁶⁴⁷ Depending on the publishing channel – repositories, journals or books – this search has found solutions at different degrees of stability. Although a large array of models have been proposed and implemented, the OA journal market has seen the consolidation of an arrangement in which authors – or their funding institutions – pay for the article processing fees as its dominant model, whereas the search for standard models in the OA book publishing domain is still very much ongoing.

⁶⁴³ See Willinsky, 'The Stratified Economics of Open Access' (n 576) 64; Oppenheim, 'Electronic Scholarly Publishing and Open Access' (n 220) 584-585.

⁶⁴⁴ See Laakso and Björk, 'Anatomy of Open Access Publishing' (n 261) 131.

⁶⁴⁵ See Odlyzko, 'Open Access, Library and Publisher Competition, and the Evolution of General Commerce' (n 600) 2; Björk, 'Open Access' (n 484) 9.

⁶⁴⁶ Ibid.

⁶⁴⁷ See Bernius and others, 'Open Access Models and their Implications for the Players on the Scientific Publishing Market' (n 227) 105; John Willinsky, *The Access Principle* (n 3) 211-216. See also, for OAP business models in the domain of scholarly society and university presses, AAUP, 'Sustaining Scholarly Publishing' (n 576); Mary Waltham, 'Learned Society Open Access Business Models' (JISC 2005) <<http://www.marywaltham.com/JISCReport.pdf>> accessed 16 January 2013. For an earlier study on OAP business models, providing also a panoramic view of publisher types and general characteristics of OA journal publishing – including location, subject matter, type of content, age of the journal, format, online availability, manuscript statistics, circulation and usage, impact, financial attributes, copy-editing, peer review, copyright, pre/post publication rights – based on a survey among market players, see Kaufman-Wills Group, *The Facts about Open Access: A Study of the Financial and Non-financial Effects of Alternative Business Models on Scholarly Journals* (ALPSP 2005) <<http://sippi.aaas.org/Pubs/FAOAccompleteREV.pdf>> accessed 23 January 2013.

The miscellaneous array of OAP business models that has so far emerged can be explained by the equally diverse interests of the academic publishing players. According to Willinsky, the economics of OA is largely determined by the ‘interests of a stratified scholarly publishing market’ which may be divided into independent journals, scholarly society publishers and commercial publishers, each of these experimenting with business models which hold promise for sustaining, if not extending, the sector’s current position.⁶⁴⁸ Again, the fact that publishers active in OA can be divided into born open access publishers and conventional publishers⁶⁴⁹ that have entered the market later to test its potential may be seen as an additional cause of the proliferation of different business models. Additionally, authors have shown that there are significant differences between scientific disciplines with respect to researchers’ awareness and experience of OA journals and self-archiving, therefore a ‘one-size-fits-all’ approach as promoted by most recent policy approaches may not prove very effective.⁶⁵⁰

3.4.1 Repositories

In the majority of cases, subject repositories ‘are run predominantly using voluntary labour, open source IT platforms, and free hosting by a university or university department.’⁶⁵¹ However, the largest repositories have had to deploy miscellaneous mechanisms to earn income. As a first example, ArXiv – which was the first notable OA subject-specific repository ever developed, as mentioned in Part I of this study – has based its business model on membership payments from research institutions. Since 2010, Cornell University Library (CUL)’s sustainability planning initiative has aimed to reduce ArXiv’s financial burden and dependence on a single institution, instead creating a broad-based, collaboratively governed, community-supported resource.⁶⁵² ArXiv has set up a membership programme aiming to engage libraries and research laboratories worldwide that represent ArXiv’s heaviest institutional users. ArXiv’s membership programme is based on a business model for generating revenue that entails three sources of revenue: (i) a cash subsidy of 75,000 dollars from CUL; (ii) a contribution of 350,000 dollars from the Simons Foundation; and (iii) a five-year pledge set in four tiers from 1,500 to 3,000 dollars based on usage ranking from

⁶⁴⁸ See Willinsky, ‘The Stratified Economics of Open Access’ (n 576) 53.

⁶⁴⁹ Oppenheim, ‘Electronic Scholarly Publishing and Open Access’ (n 590) 586-587.

⁶⁵⁰ See Thomas Eger, Marc Scheufen and Daniel Meierrieks, ‘The Determinants of Open Access Publishing: Survey Evidence from Germany’ (2013) SSRN Working Paper Series <<http://ssrn.com/abstract=2232675>> accessed 8 April 2013. See also Brown, Griffiths, and Rascoff, ‘University Publishing in a Digital Age’ (n 576) 5 (noting that ‘[o]pen access efforts may be a solution to some of these problems, but we will argue that there is no one-size-fits-all solution across disciplines and types of content’).

⁶⁵¹ Björk, ‘Open Access’ (n 484) 10. See also Björk, ‘Open Access Subject Repositories’ (n 230).

⁶⁵² See ArXiv, Help, Support, Sustainability Initiative <<http://arxiv.org/help/support/faq#1A>> accessed 2 June 2013.

each member institution.⁶⁵³ Membership fees are based on an institutional ranking calculated according to the number of articles downloaded, with fees decreasing as the number of participating institutions increases. It is worth stressing that this is not a mandatory fee-based funding model that forces funding members to support ArXiv in order to access content – which still remains open to all downloaders and uploaders – but rather a gift economy model. The participating organisations enjoy as additional exclusive benefits participation in ArXiv governance, access to enhanced institutional use statistics and public acknowledgment of members' role in financial support.⁶⁵⁴

Again, looking at one of the most successful repositories in the social sciences and humanities, the SSRN has developed a business model based on providing dissemination services to institutions, both serving as a publishing platform for working paper series and acting as middleman for subscription or pay-per-view content. SSRN is a for-profit corporation that earns its revenues from abstracting journals, site subscription licence fees from the more than four hundred institutions that pay SSRN to host the Research Paper Series for the institution, 'fees received for professional and job announcements, conference fees for SSRN's Conference Management System, and . . . fees shared with SSRN by publishers who distribute their papers through SSRN on a pay per download basis.⁶⁵⁵ In the case of papers distributed on SSRN on a pay per download basis, SSRN's rule is that the price for such papers on SSRN must be equal to or below the lowest price that such papers are available anywhere on the web to non-subscribers.⁶⁵⁶

According to Björk, the development of business models for IRs, in contrast to subject repositories, is less of a problem as they are usually created by a managerial university decision and handled like any other university infrastructure, such as a library.⁶⁵⁷ Therefore, the standard business model for IRs may be broadly included in the category of institutional subsidy.

3.4.2 Journals

⁶⁵³ See ArXiv, Help, Support, arXiv Membership Model, What is the Revenue Model for ArXiv? <<http://arxiv.org/help/support/faq#1A>> accessed 2 June 2013.

⁶⁵⁴ See ArXiv, Help, Support, arXiv Membership Model, What are the Benefits of Becoming a Member? <<http://arxiv.org/help/support/faq#1A>> accessed 2 June 2013.

⁶⁵⁵ See Plotin, 'Legal Scholarship, Electronic Publishing, and Open Access' (n 350) 51-53 citing SSRN's Objective and Commitments to Users 20th Anniversary Message from Michael C. Jensen, Chairman <<http://www.ssrn.com/update/general/mjensen.html>> accessed 23 March 2013.

⁶⁵⁶ See ABOUT SSRN, From the Desk of Michael C. Jensen, Chairman, SSRN's Objective <<http://www.ssrn.com/update/general/mjensen.html>> accessed 23 March 2013

⁶⁵⁷ See Björk, 'Open Access' (n 484) 10.

The number of possible OA journal publishing business models is potentially very large and several categorisations have been attempted. As already mentioned, the market and consequently the business models that have emerged are characterised by the coexistence of born OA publishers and conventional publishers experimenting with OA.⁶⁵⁸ Some of the possible business models that have so far emerged in OA journal publishing will be outlined below.⁶⁵⁹

3.4.2.1 *Volunteer Effort*

Voluntary work characterised the early stage of OA journal development. Initially, a large percentage of the OA journals were new born electronic only journals established by independent academics, which did not charge authors for publishing and were based on volunteer effort.⁶⁶⁰ According to Björk, the voluntary work model is operable for small journals but does not scale to bigger journals for which a steady income is necessary.⁶⁶¹ A slight variation of this model has seen editorial staff being provided with an honorarium for their activities, which is usually given by an external sponsor.⁶⁶²

3.4.2.2 *Publication Fees*

Article Processing Charges (APCs) as a business model for OA journals have shown a special vitality. However, whereas commercial publishers have increasingly embraced APCs, a vast array of critical views has equally been put forward, as we will detail in a moment. Also, the long-term sustainability of this business model has been a privileged subject of review as well as management of the APC system at university level.

Since 2000, the importance of APCs as a business model for funding OAP has grown steadily. Most STEM OA publishers, including PLoS, BioMed Central, Hindawi and Medknow, cover the publication costs through APCs for accepted manuscripts. In the case of Hindawi, for example, the charges apply only to peer-reviewed contributions for some of the Hindawi journals, while contributions on almost half of the Hindawi journals' portfolio are free of charge.⁶⁶³ Hindawi also offers two different types of OA institutional membership: an Annual Membership, based on a flat rate payment covering all the accepted articles authored by

⁶⁵⁸ See Oppenheim, 'Electronic Scholarly Publishing and Open Access' (n 220) 586-587.

⁶⁵⁹ For a detailed list of OAJ business models and practical examples of publications endorsing those models, see Open Access Directory (OAD), OA Journal Business Models <http://oad.simmons.edu/oadwiki/OA_journal_business_models> accessed 13 June 2013.

⁶⁶⁰ Björk, 'Open Access' (n 484) 8-9.

⁶⁶¹ Ibid 9.

⁶⁶² See Oppenheim, 'Electronic Scholarly Publishing and Open Access' (n 220) 586.

⁶⁶³ See Hindawi, Article Processing Charges <<http://www.hindawi.com/apc>> accessed 10 June 2013 (the article processing charge for the Hindawi journals requesting them range from 300 to 1,500 dollars).

individuals affiliated with the member institution and depending on the research output level of the institution and its historical publishing pattern in Hindawi journals, and a Prepaid Membership, based on a prepayment starting at US\$5,000 to cover the article processing charges of the researchers affiliated with an institution, then receiving a 10 per cent discount for any publication charges that are paid from their account.⁶⁶⁴

The workability of the APC business models has been proven by the increasing entry of established publishers into the market. Recently, they have either purchased newly founded publishers specialising in OAP, such as Springer's purchase of BioMed Central in 2008,⁶⁶⁵ or have established OA journals on their own, often, following the success of PLoS ONE, in the form of so-called 'mega journals', such as Nature Scientific Reports, Springer Plus or Sage Open.⁶⁶⁶ Similarly, university publishers have adopted APC business models. Oxford University Press, for example, have launched the Oxford Open initiative offering a £3,000 OA option for 70 of the over 240 journal titles included in the OUP portfolio.⁶⁶⁷

In connection with APC business models, attempts are being made to promote the so far quite rare conversion of subscription journals to APC-funded OA. In this respect, for example, the High Energy Physics (HEP) community – after pioneering pre-print repositories – has also been very active in promoting open access to peer-reviewed publications by setting up SCOAP³ under the aegis of CERN.⁶⁶⁸ SCOAP³ has created a consortium to convert high-quality HEP journals to OA by federating HEP funding agencies and libraries to cover the peer-review service, while publishers make the electronic versions of their journals OA.⁶⁶⁹ Basically, a US\$15 million payment to the publishers based on APCs between US\$1,500 and 3,000 multiplied by the number published in the field – which is less than the money paid by libraries in total subscription fees for the six journals in the field in which 80 per cent of the articles are published – could purchase OA for the entire field of particle physics.⁶⁷⁰ Willinsky has described the SCOAP³ experiment as the 'sub-discipline processing fee' and noted that

⁶⁶⁴ See Hindawi, Institutional Membership <<http://www.hindawi.com/memberships>> accessed 10 June 2013.

⁶⁶⁵ See 'Mergers and Acquisitions: BioMed Central Acquired by Springer' (2008) 12(10) Scholarly Communications Report 1; Willinsky, 'The Stratified Economics of Open Access' (n 576) 64.

⁶⁶⁶ See Björk, 'Open Access' (n 484) 9; Robin Peek, 'Discovering the New OA Journals' (2012) 29(8) Information Today 24; Robin Peek, 'Sage Takes and OA Leap' (2011) 28(1) Information Today 32.

⁶⁶⁷ See Oxford Journals, Oxford Open <http://www.oxfordjournals.org/oxfordopen> accessed 1 July 2013. See also Willinsky, 'The Stratified Economics of Open Access' (n 576) 65; Peter Suber, 'Oxford Reduces Prices on 29 Hybrid Journals' (*Open Access News*, 29 July 2007) <http://www.earlham.edu/~peters/fos/2007/07/oxford-reduces-prices-on-26-hybrid.html> accessed 1 July 2013.

⁶⁶⁸ See Sponsoring Consortium for Open Access Publishing in Particle Physics <<http://scoap3.org/index.html>> accessed 2 June 2013. See also Salvatore Mele and others, 'SCOAP3 and Open Access' (2009) 35(4) *Serials Review* 264, 264-271 <<http://dx.doi.org/10.1016/j.serrev.2009.08.015>> accessed 13 June 2013.

⁶⁶⁹ SCOAP³ Working Party, *Towards Open Access Publishing in High Energy Physics* (n 296) 4.

⁶⁷⁰ See Mele and others, 'SCOAP3 and Open Access' (n 668) 264-271.

this innovative form of cooperative where libraries and the sector-specific community enter into direct negotiations with publishers may be a viable option, especially in disciplines whose journals are at the high end of the pricing spectrum.⁶⁷¹

As the dominant emerging OA model, APCs have been put under intensive scrutiny by the literature⁶⁷² and criticised on several grounds. Concerns have been raised primarily in terms of dead-weight loss on the part of the authors, rather than the readers. SOAP has highlighted funding as one of the main barriers to OAP among the academic community.⁶⁷³ In particular, the payment of APCs has been mentioned by 39 per cent of the respondents – averaging almost 40,000 researchers worldwide – as a reason they had not published in OA journals.⁶⁷⁴ According to Björk and Salomon, the leading scientific OA journals using the APC model tend to charge between US\$2,000 and US\$3,000 for publishing, but overall the average APC was US\$900 in 2010 across all journals charging APCs listed in the Directory of Open Access Journals, which still constitutes a substantial barrier to submissions in many fields.⁶⁷⁵ In this respect, the entry of commercial publishers into the APC funded OA market seems to add to this conundrum of unaffordable APCs by having the effect of raising APCs. For example, in the case of BioMed Central – bought by Springer in 2008 – fees have risen to a figure above US\$1,500 – 2,000, depending on the journal, from the initial US\$500 charged at the time of BioMed Central's inception.⁶⁷⁶

Dead-weight loss concerns have also been construed in terms of unequal standing in the capacity for circulating knowledge between top, well-endowed universities and researchers and other academic players. For example, Feess and Scheufen uphold the argument that 'switching from a closed to an open access-mode is likely to increase the gap between researchers from top and mediocre universities'.⁶⁷⁷ Mediocre universities will often not pay fully for the submission fee under OA, while the best universities – which already tend to recruit the most talented researchers – will have more funds available for APCs, including also higher submission fees for fast tracks in journals. Additional concerns may be raised, Feess and Scheufen argue, when considering developing countries.

⁶⁷¹ See Willinsky, 'The Stratified Economics of Open Access' (n 576) 65.

⁶⁷² See David J Solomon and Bo-Christer Björk, 'Publication Fees in Open Access Publishing: Sources of Funding and Factors Influencing Choice of Journal' (2012) 63(1) *J Am Soc'y for Info Sci Tech* 98, 98 -107; David J Solomon and Bo-Christer Björk, 'A Study of Open Access Journals Using Article Processing Charges' (2012) 63 *J Am Soc Info Sci Tech* 1485, 1485-1495.

⁶⁷³ See Dallmeier-Tiessen and others, 'Highlights from the SOAP Project Survey' (n 638) 1.

⁶⁷⁴ *Ibid* 7.

⁶⁷⁵ See Björk and Solomon, 'Open Access Versus Subscription Journals' (n 806) 75.

⁶⁷⁶ See BioMed Central, Article-Processing Charges <<http://www.biomedcentral.com/authors/apc>> accessed 1 July 2013. See also Willinsky, 'The Stratified Economics of Open Access' (n 576) 64.

⁶⁷⁷ Feess and Scheufen, 'Academic Copyright in the Publishing Game' (n 493) 2.

Rising costs for research intensive institutions have also been considered, flagging APCs with free-riding concerns. Michel Beaudouin-Lafon has opposed authors' fees because they would be too expensive for research institutions publishing heavily and 'those who benefit the most from this model are neither the scientific community nor the general public [but] the big pharmaceutical labs and the tech firms who publish very little but rely on the publication of scientific results for their businesses'.⁶⁷⁸ Again, Müller-Langer and Watt consider the possible detrimental effects of universal open access on research institutions with high publication outputs as publication fees would surpass savings in subscription fees for those institutions. They propose, therefore, a new pricing system based on the economics of insurance, so that 'publishers would charge all academic institutions an ex ante premium that insures them against the risk of paying publication fees when papers of affiliated authors are published in one of their journals'.⁶⁷⁹

Smith expressed concern with the 'uncomfortable conflict of interest' of having authors paying only if the article is accepted.⁶⁸⁰ Therefore, he is envisaging a model that may rebalance the contribution of journals in the creative process by having authors paying for peer-review and editing services that may actually improve authors' scholarship. In Smith's own words, he imagines a properly functioning market that may let resources flow to where they add most value by setting up

a model in which authors have a choice in paying for various services. They might pay \$50 for a rapid rejection, \$150 for a detailed rejection with ideas on how to improve the study for submission elsewhere, \$250 for external review (more for more reviewers) with the journal passing on some of the money to the reviewers, and \$450 for a detailed report from the editorial committee. They could then choose whether to pay to have their paper technically edited, perhaps even with a choice over how extensively, and choose whether to pay for the journal to prepare a short version for the paper journal. Subsequently they might pay for press releases, media support, or even a dissemination and change programme — funders fund research to achieve change not just a publication in a journal.⁶⁸¹

A partial implementation of Smith's proposal, and a slight variation of the APC model, or in some instances an additional feature to that model, is a **submission fee model**, where a fee

⁶⁷⁸ Michel Beaudouin-Lafon, 'Open Access to Scientific Publications: The Good, the Bad and the Ugly' (2010) 53(2) Communications of the ACM 32, 32-34.

⁶⁷⁹ Müller-Langer and Watt, 'Copyright and Open Access For Academic Works' (n 509) 63.

⁶⁸⁰ Smith, 'The Highly Profitable but Unethical Business of Publishing Medical Research' (n 193) 456.

⁶⁸¹ Ibid.

is charged for evaluating a submitted paper, regardless of whether it is accepted or not.⁶⁸² However, journal submission fees seem to be quite rare.⁶⁸³ Nonetheless, one of the major advantages of journal submission fees is that it would allow lowering the publication fees for journals with a high rejection rate.⁶⁸⁴

Armbruster has noted that article processing fees may not work well in the social sciences and humanities because of the limited research grants, authors who are frequently not members of research institutions, and single-authored papers which are still the norm.⁶⁸⁵ He indicates as solutions for covering costs: (i) countrywide agreements to pool resources to fund OAP, such as those signed by Denmark and Norway with BioMed Central; (ii) centralising functions and running e-print repositories, knowledge exchange and e-journals in a more efficient manner through automation, while aiming for economies of scale; (iii) defraying costs by raising an endowment to have publication charges waived in the case of institutional and individual hardship; (iv) having library associations, university and national e-grids take over archiving in full in order to minimise the publication costs to authors.⁶⁸⁶ In Armbruster's view, the key to the success of OAP, especially in social sciences and humanities, is the reduction of publishing costs by using digital and automated publishing processes and by spreading them among as many parties as possible, including scholarly institutions, funding agencies, libraries and authors.

Arrangements to enable researchers to meet the costs of publication fees have been discussed and implemented by research communities and institutions.⁶⁸⁷ Guidance on the payment of APCs has been provided by a report jointly prepared by the Research Information Network (RIN) and University UK (UUK).⁶⁸⁸ The report considers four key areas

⁶⁸² See Mark Ware Consulting, 'Submission Fees – A Tool in the Transition to Open Access?' (Knowledge Exchange 2010) <<http://www.knowledge-exchange.info/Default.aspx?ID=413>> accessed 13 June 2013. See also John Bell, 'The Future of Legal Research' (2012) 12 Legal Information Management 314 (noting that the right way forward is submission charges, rather than APCs, if we think that the real importance of a journal is peer review).

⁶⁸³ See Anna Sharman, 'Journal Submission Fees: Why Are They so Rare?' (*Sharmanedit*, 21 March 2012) <<http://sharmanedit.wordpress.com/2012/03/21/submission-fees>> accessed 13 June 2013.

⁶⁸⁴ *Ibid.*

⁶⁸⁵ Armbruster, 'Open Access in Social and Cultural Science' (n 278) 442

⁶⁸⁶ *Ibid* 442-443.

⁶⁸⁷ See, for an early example of the establishment of a central, institutional fund for the payment of APCs and a systematic process to support investigators in disseminating their research by the University of Nottingham, University of Nottingham, Information Services, Open Access <<http://www.nottingham.ac.uk/is/finding/openaccess.aspx>> accessed 13 June 2013.

⁶⁸⁸ See Universities UK and Research Information Network, 'Paying for Open Access Publication Charges' (March 2009) <<http://www.rin.ac.uk/our-work/research-funding-policy-and-guidance/paying-open-access-publication-charges>> accessed 25 January 2013 (discussing also some of the arrangements adopted by institutions worldwide).

that institutions need to consider to ensure that publication fees can be supported in a sustainable way: coordination of policy, management of funding, communication, and interface with the researcher.⁶⁸⁹ Among the report recommendations, Higher Education Institutes should designate a single person to coordinate the activities in this field, establish a dedicated budget, establish clear criteria for applying for funds, and provide effective communication to all relevant academic and administrative staff.⁶⁹⁰ On the funders' side, the RIN and UUK report recommends that funders provide support for researchers in meeting the payment of APCs.⁶⁹¹ Again, the publishers are recommended to include in the submission process a requirement for authors to confirm that they will pay the fee, if the paper is accepted for publication, or in the case of hybrid journals a requirement to indicate whether or not authors wish to pay a publication fee.⁶⁹² Publishers should also, if possible, alert authors to the funders' policies on the use of grant income to pay for APCs and, where publishers operate membership or subscription schemes, alert the authors as to whether their institution is a member.⁶⁹³ Similarly member institutions should be informed when a paper from one of their affiliates is accepted for publication.⁶⁹⁴ On the authors' side, the report recommends that they familiarise themselves with funders' policies, especially the availability of funds for APCs, and make sure that they have access to the funds to meet the APCs.⁶⁹⁵

Literature has also looked at the sustainability of a central institutional fund for the payment of APCs.⁶⁹⁶ Pinfield and Middleton have noted that 'in the short term at an institutional level sustainability [. . .] remains a challenge', especially when institutions must face both rising subscription prices and increasing OA APCs.⁶⁹⁷ Therefore, Pinfield and

⁶⁸⁹ Ibid 11-14.

⁶⁹⁰ Ibid 19.

⁶⁹¹ Ibid.

⁶⁹² Ibid 20.

⁶⁹³ Ibid.

⁶⁹⁴ Ibid.

⁶⁹⁵ Ibid 21.

⁶⁹⁶ See, for a general overlook at sustainability in not-for-profit 'online academic resources' (OARs) projects, although not specifically addressed to OAP, Kevin Guthrie, Rebecca Griffiths, and Nancy L Maron, 'Sustainability and Revenue Models for Online Academic Resources. An Ithaka Report' (JSIC/ITHAKA 2008) <<http://www.sr.ithaka.org/research-publications/sustainability-and-revenue-models-online-academic-resources>> accessed 23 January 2013 (discussing specifically the sustainability of the 'contributor [author] pays model' at 33-35).

⁶⁹⁷ See Stephen Pinfield and Christine Middleton, 'Open Access Central Funds in UK Universities' (2012) 25(2) *Learned Publishing* 107, 107-117 <<http://eprints.nottingham.ac.uk/1625/1/OA.pdf>> accessed 13 June 2013 (presenting also data showing that only a minority of institutions have set up central funds). See also Stephen Pinfield, 'Paying for Open Access? Institutional Funding Streams and OA Publication Charges' (2010) 23 *Learned Publishing* 39, 39-52 <<http://dx.doi.org/10.1087/20100108>> accessed 13 June 2013; Leila Fernandez and Rajiv

Middleton argued, publishers should take this into consideration by avoiding ‘double dipping’ and setting up policies for adjusting subscription levels in relation to income received from APCs.⁶⁹⁸ Discussing long-term sustainability, Cook and others regard gold OA as sustainable provided that the level of APCs remains at or below the value where ‘academic institutions have a zero change in annual net costs’.⁶⁹⁹ Cook and others set the average level of sustainable APC at or below £1,995, while Pinfield and Middleton identify the break-even point in the model for a university of the size of Nottingham at £1,255.⁷⁰⁰ Ware and Mabe estimate the cost of seeing through an article to publication as \$3,800.⁷⁰¹ They note that this figure is higher than the typical ‘article processing fees’ that are now charged by OA biomedical journals, while also observing that such fees cannot be applied to all fields, given that 25 per cent of researchers work in developing countries and 60 per cent do not have ‘separately identifiable research funding’ that might cover those costs.⁷⁰²

3.4.2.3 Hybrid OA

Subscription publishers have also tried an OA option called hybrid OA journals where authors can pay fees – usually in the range of US\$3,000 – to have the electronic versions of their articles OA as part of what is otherwise a subscription journal. The uptake for hybrid journals in general has been very limited at about 1 per cent to 2 per cent for the major publishers.⁷⁰³ Springer had already begun experimenting with the article-processing-fee model with its Open Choice option, in which authors are able to purchase for US\$3,000 open access to their particular articles within an otherwise subscription-based journal.⁷⁰⁴ There

Nariani, ‘Open Access Funds: a Canadian Library Survey’ (2011) 6(1) *Partnership: The Canadian Journal of Library and Information Practice and Research* <http://journal.lib.uoguelph.ca/index.php/perj/article/view/1424> accessed 13 June 2013 (finding that there is substantial support for OAP, with twelve of eighteen respondents indicating that their libraries have dedicated open access funds with nine institutions covering author fees).

⁶⁹⁸ Pinfield and Middleton, ‘Open Access Central Funds in UK Universities’ (n 697) 116.

⁶⁹⁹ See Joel Cook and others, ‘Heading for the Open Road: Costs and Benefits of Transitioning in Scholarly Communications’ (Research Information Network 2011) 13 <<http://www.rin.ac.uk/our-work/communicating-and-disseminating-research/heading-open-road-costs-and-benefits-transitions-s>> accessed 13 June 2013.

⁷⁰⁰ See Pinfield and Middleton, ‘Open Access Central Funds in UK Universities’ (n 697) 115. See also Alma Swan, ‘Modelling Scholarly Communication Options: Costs and Benefits for Universities’ (JISC 2010) <<http://repository.jisc.ac.uk/442>> accessed 13 June 2013 (defining a framework which allows individual institutions).

⁷⁰¹ See Ware and Mabe, ‘The STM Report’ (n 577) 52 (excluding non-cash peer review costs).

⁷⁰² *Ibid.*

⁷⁰³ See Björk and Solomon, ‘Open Access Versus Subscription Journals’ (n 806) 75.

⁷⁰⁴ See Springer, Springer Open Choice <<http://www.springer.com/open+access/open+choice?SGWID=0-40359-0-0-0>> accessed 13 June 2013.

are similar programmes under way at the other major publishers, Elsevier, Wiley-Blackwell, Taylor and Francis, and Sage.⁷⁰⁵

Authors have seen hybrid gold – having individual authors paying extra APCs in order to have their papers appear without the gatekeeping charges on publishers' websites, while libraries and institutions still have to pay for the journals' subscriptions – as a form of double-dipping by publishers that should be opposed.⁷⁰⁶ Stuart Shieber, for example, in his proposal discussing issues of implementation for an APC working programme at university level suggest that 'journals with a hybrid open-access model or a delayed open-access model [should] not be eligible' for reimbursement.⁷⁰⁷

3.4.2.4 Institutionally Subsidised OA

The institutional subsidy model encompasses any practice by which an institution subsidises, in whole or in part, directly or indirectly, an OA journal through any means including cash, facilities, equipment or personnel.⁷⁰⁸ Given the breadth of this category, the number of OA journals that may fall within it is extremely large. Institutional subsidies may vary according to the nature of the institutions providing the subsidy, including university subsidies, government subsidies, foundation subsidies, corporate subsidies and consortial subsidies.⁷⁰⁹ The most common form of university subsidy for OA journals is the in-house publication of the journal, but university subsidies also include funds for APCs or provision of facilities, equipment or personnel. Similarly, governmental subsidies for OA journals take several forms, ranging from 'direct grants to OA journals or publishers; grants to researchers which they may use for publication fees or page charges at OA journals; in-house publication of OA journals; tax deductions for non-profit publishers of OA journals; budgetary support for public universities which the institutions may use to publish OA journals, subsidise OA journals, or hire faculty who spend part of their work time editing OA journals'.⁷¹⁰ Consortial

⁷⁰⁵ See Willinsky, 'The Stratified Economics of Open Access' (n 576) 64; Charles Oppenheim, 'Electronic Scholarly Publishing and Open Access' (n 220) 583-584. For a complete list of hybrid OA publishers, see SHERPA/RoMEO, Publishers with Paid Options for Open Access <<http://www.sherpa.ac.uk/romeo/PaidOA.html>> accessed 13 June 2013.

⁷⁰⁶ See Adams, 'Copyright and Research' (n 220) 288. See also Bo-Christer Björk, 'The hybrid model for open access publication of scholarly articles – A failed experiment?' (2012) 63(8) J of the American Soc'y of Info Sciences and Tech 1496. See also Björk, 'Open Access' (n 484) 9 (noting that hybrid OA 'has not become popular due to the generally high price level and the perception that greedy publishers are trying to charge twice for the same service').

⁷⁰⁷ See Shieber, 'Equity for Open-Access Journal Publishing' (n 714) 2-3.

⁷⁰⁸ Raym Crow, 'Income Models for Open Access: An Overview of Current Practice' (SPARC 2009) 2.4-2.5 <<http://sparc.arl.org/resources/papers-guides/oa-income-models>> accessed 13 June 2013.

⁷⁰⁹ For an exhaustive list of examples of journals and publications which have been made OA through these different institutional subsidy models, see OAD, OA Journal Business Models (n 659).

⁷¹⁰ Ibid.

subsidies are popular as well. The SCOAP³ mentioned above⁷¹¹ is a good example of a customised or ad hoc coalition of organisations that has been created to support an OA resource. Other notable examples of consortial subsidies include D-Lib Magazine, which is supported by the D-Lib Alliance,⁷¹² and eLife, which is supported by a consortium composed of the Howard Hughes Medical Institute, the Max Planck Society and the Wellcome Trust.⁷¹³

A couple of other business models, which can be broadly included in the category of institutional subsidy, have enjoyed some success and may be singled out from the numerous variants. One form of institutional subsidy for an OA publication is to create an **endowment** and use the interests to cover the publication's expenses.⁷¹⁴ One example is represented by a number of reviews published by *Americana: The Institute for the Study of American Popular Culture*.⁷¹⁵ The **membership due model** is an additional form of institutionally subsidised journal. In this instance, membership organisations, such as a learned society, subsidise, in whole or in part, an OA journal with membership dues.

Another popular business model is that of **cross-subsidised OA** or **priced editions** that serve to support OA to another edition. The arrangements in place within this model vary, including a delay in release of the OA edition, a difference in quality between the two editions, a short summary included in the priced edition as a form of added value, sale of reprints or offprints to help support an OA journal, subsidisation of OA publications with profits from a non-OA publication, or selection of articles from a priced journal or collection of journals to be featured in a full OA journal.⁷¹⁶

3.4.2.5 Fund-raised OA

Fund-raising, as a request for a periodic or continuous donation, is a popular model for supporting OA publication.⁷¹⁷ The Public Library of Science, perhaps the most renowned OA journal publisher, adopts this model together with grants and gifts from foundations and publication fees.⁷¹⁸ Fundraising is often deployed along with other sources of support. The

⁷¹¹ See infra Section 3.4.2.2.

⁷¹² See D-Lib Magazine, About D-Lib Alliance <<http://www.dlib.org/dlib/Dlib-alliance.html>> accessed 13 June 2013.

⁷¹³ See eLIFE <<http://www.elifesciences.org>> accessed 13 June 2013.

⁷¹⁴ See Crow, 'Income Models for Open Access' (n 708) 2.7.

⁷¹⁵ See Endowment Fund <http://www.americanpopularculture.com/journal/endowment_fund.htm> accessed 13 June 2013.

⁷¹⁶ See OAD, OA Journal Business Models (n 659) (with examples for each type of sub-models).

⁷¹⁷ See Crow, 'Income Models for Open Access' (n 708) 2.6.

⁷¹⁸ See PLOS, Support Us <<http://www.plos.org/support-us>> accessed 13 June 2013.

so-called ‘**street performer protocol**’, written by John Kelsey and Bruce Schneier,⁷¹⁹ is still another form of fundraising in which the creator requests a specific sum to be raised before creating the work. Once the private donations have fulfilled the author’s request, the work is created and delivered OA. Inspired by the same principles, crowdsourcing or **crowdfunding** is an increasingly popular tool for raising money online. In this case the wider online community should provide the financial donations to fund the publication projects. Online crowdfunding takes place on dedicated platforms. On Kickstarter and similar platforms, such as ChipIn for example,⁷²⁰ people can pledge for an economic goal which is set in advance by the project developer.⁷²¹ Kickstarter works by giving creators a means to let other people crowdfund the creation of new works. Rather than being a platform for directly buying a work already created, it lets creators offer different tiers through which the ‘crowd’ can help fund a project, in the hope of reaching a funding threshold for the work to be created. Only after the threshold is met does the money change hands.

3.4.2.6 Other OA Journal Business Models

Several other miscellaneous models have also emerged to support OA journals with different degrees of diffusion and success. Certainly, advertising seems to be a model that could hold promise for the future, especially in view of the easy deployment of interactive and targeted advertising in digital publication.⁷²² Under an **advertising model**, a journal can provide OA to content online in combination with advertising messages.⁷²³ In one scenario, the advertising model may require marketing staff at the journal directly selling advertising space, as in the

⁷¹⁹ See John Kelsey & Bruce Schneier, ‘The Street Performer Protocol and Digital Copyright’ (1999) 4(7) First Monday <<http://www.firstmonday.org/ojs/index.php/fm/article/view/673/583>> accessed 13 June 2013; John Kelsey and Bruce Schneier, ‘The Street Performer Protocol’ (1998) <<http://www.schneier.com/paper-street-performer.pdf>> accessed 13 June 2013. See also Yochai Benkler, *The Penguin and the Leviathan: How Cooperation Triumphs over Self-Interest* (Crown Business 2011) 147-149.

⁷²⁰ See ChipIn <<http://www.chipin.com>> accessed 13 June 2013.

⁷²¹ See Kickstarter <www.kickstarter.com> accessed 13 June 2013. See also Michael Masnick and Michael Ho, ‘The Sky is Rising: A Detailed Look at the State of the Entertainment Industry’ (Floor 64, January 2012) 5 <<http://www.techdirt.com/skyisrising>> accessed 13 June 2013.

⁷²² See Randal C Picker, ‘The Mediated Book’ (2009) U of Chicago Law & Economics Olin Working Paper No. 463 <<http://ssrn.com/abstract=1399613>> accessed 13 June 2013 (noting that we have entered the era of the mediated book; digital texts can be produced at the instant a consumer wishes to interact with the text: additionally, on-demand texts can be financed through advertising, therefore, mediated texts can be updated instantly with new, continuously-timely updated personalised advertising; that process, of course, will raise standard privacy issues).

⁷²³ See Crow, ‘Income Models for Open Access’ (n 708) 2.2; Guthrie, Griffiths, and Maron, ‘Sustainability and Revenue Models for Online Academic Resources’ (n 696) 39-46 (discussing in detail the mechanics and sustainability of advertising business models).

case of the British Medical Journal.⁷²⁴ Alternatively, the journal may engage services like AdSense or Amazon Associates Program, which randomly place ads on the journal's page based on an algorithmic reading of the content. As noted by Suber, the use of AdSense should be welcome as it may help to answer potential critical views that advertising may compromise editorial integrity.⁷²⁵

Some journals have also implemented an **e-commerce model** and raise funds by offering branded products for sale.⁷²⁶ This can be done either internally or through an external vendor. CafePress, for example, is one popular vendor selling products for the Journal of Virtual Worlds Research, the Libertarian Papers and Rejecta Mathematica.⁷²⁷ Again, a **value-added services model** has also been used by some journals. With this arrangement, content is published OA but a range of additional services – such as article alert, site customisation or unlimited DRM-free download access to publications – are offered on top of the content.⁷²⁸ Finally, it is worth mentioning a publishing practice known as **temporary OA**, although this is not in fact a pure OA model, as a publisher offers free online access to content for a limited period of time, after which the content becomes or returns to be toll access. In truth, it is difficult to classify programs like the 'New Launch Journals' at Emeralds as anything close to OAP;⁷²⁹ they rather resemble market practices for promoting future subscriptions to new journals.

3.4.3 Books

In recent times, enhanced interest has also emerged in the viability of OAP for books and monographs. Understandably, the focus on OAP for books has been highest in the field of

⁷²⁴ See British Medical Journal Group, Advertising and Sponsorship <<http://group.bmj.com/group/advertising>> accessed 13 June 2013.

⁷²⁵ See Peter Suber, 'Google AdSense Ads for Open-Access Journals' (2006) 94 SPARC Open Access Newsletter <<http://legacy.earlham.edu/~peters/fos/newsletter/02-02-06.htm#ads>> accessed 13 June 2013.

⁷²⁶ See Crow, 'Income Models for Open Access' (n 708) 3.6.

⁷²⁷ See CafePress <<http://www.cafepress.com>> accessed 13 June 2013; CafePress, Journal of Virtual Worlds Research Online Store <<http://www.cafepress.com/jvwr.319153867>> accessed 13 June 2013; CafePress, LibertarianPapers.org Online Store <<http://www.cafepress.com/libpap>> accessed 13 June 2013; CafePress, Rejecta Mathematica <<http://www.cafepress.com/rejecta>> accessed 13 June 2013.

⁷²⁸ See Crow, 'Income Models for Open Access' (n 708) 3.5. For an example of this model, see Open Edition <<http://www.openedition.org>> accessed 13 June 2013 (offering an OpenEdition Freemium subscription to six value added services on top works from four publication and information platforms in the humanities and social sciences, including Revues.org, Calenda, Hypotheses and OpenEdition books). See also Pierre Mounier, 'Freemium as a Sustainable Economic Model for Open Access Electronic Publishing' (2011) 31(3/4) Information Services and Use 225, 225-233 <<http://iospress.metapress.com/content/ar4164711347217x/fulltext.pdf>> accessed 13 June 2013.

⁷²⁹ See Emerald, New Journals: Free Access <http://www.emeraldinsight.com/new_launch/index.htm> accessed 13 June 2013.

social sciences and humanities. Traditionally, books and monographs have been a privileged medium for the circulation of research findings especially in those fields of study, whereas the use of books and monographs is now secondary in the STEM sector. This also explains the delay in developing OAP for books, as in general the OAP movement was ignited and led by the STEM sector. Increased emphasis on OAP for books has been spearheaded by the efforts of OAPEN, Open Access Publishing in European Networks, a collaborative initiative to develop and implement a sustainable open access publication model for academic books in the humanities and social sciences. OAPEN has also paid special attention to business models for books, producing *inter alia* a survey of OA book publishing, comparing a wide international range of publishing initiatives and the business models they employ, while examining their reasons for engaging in OA.⁷³⁰ In the UK, JISC Collections and the Arts and Humanities Research Council (AHRC) have recently established OAPEN-UK, a parallel project gathering evidence to help stakeholders make informed decisions on the future of open access scholarly monograph publishing.

The 2011 AAUP report has discussed at length emerging business models for university presses, with special emphasis on book publishing. The report noted that widespread experimentation in the field is still ongoing and, unlike the case of journals, there is no primary business model emerging for books.⁷³¹ For the foreseeable future, multiple business models will most likely be necessary, especially because print and digital books are likely to co-exist for some time.⁷³² The AAUP report emphasised the increasing importance of partnerships in university press publishing, taking miscellaneous forms such as ‘groups of presses working together; presses working with a variety of other nonprofits, including museums, libraries, scholarly societies, and other research organizations; and presses creating closer alliances with other units within their parent institutions’.⁷³³

In the book publishing sector, experimentation with OA is still very much ongoing and the emergence of a dominant business model, as in the case of APCs in the journal publishing sector, has not yet occurred.⁷³⁴ Most of the business models tried out in the journal

⁷³⁰ See Janneke Adema, ‘OAPEN: Overview of Open Access Models for E-books in the Humanities and Social Sciences’ (report commissioned by Open Access Publishing in European Networks, 8 March 2010) <<http://project.oapen.org/index.php/news/34-new-oapen-report-overview-of-open-access-models-for-ebooks-in-the-humanities-and-social-sciences>> accessed 23 January 2013 (a survey of Open Access book publishing comparing a wide international range of publishing initiatives and the business models they employ, while examining their reasons for engaging in Open Access).

⁷³¹ AAUP, ‘Sustaining Scholarly Publishing’ (n 576) 11. See also Susan Murray-Smith, ‘Sydney University Press: a Model for Combining Open Access with Sales’ (2009) 6(2) SCRIPT-ed 496.

⁷³² Ibid.

⁷³³ Ibid 11, 24-27.

⁷³⁴ See, for example Nigel Vincent, ‘The Monograph Challenge’ in Nigel Vincent and Chris Wickham (eds), *Debating Open Access* (British Academy 2013).

publishing sector have also been employed by book publishers.⁷³⁵ Therefore, below, we will provide a brief overview of the OA business models that have emerged specifically in the book sector and look at some particular successful experiences in book publishing as per the business models already discussed. For the rest, we will refer to what was previously said.

3.4.3.1 Dual-edition Publishing

The dual-edition publishing model is the most common OA business model, being used by the majority of OA book publishers. It consists in offering full-text OA editions together with priced print-on demand (POD) editions.⁷³⁶ This model is fully endorsed, for example, by Open Book Publishers (OBP).⁷³⁷ OBP offers a full-text online edition for free, a pdf or epub downloadable edition, which may be offered for free or for a small price, usually ranging from £4 to £6, and a priced paperback and hardback edition. OBP publishes all its titles using CC licences and suggests that authors opt for a CC-BY, although they are free to choose the CC licence that suits them best. A variant of dual-edition publishing is the so called **tiered-quality model**. Bloomsbury Academic has applied this tiered structure by selling print and enhanced eBooks next to a free HTML OA version.⁷³⁸

3.4.3.2 Collaborative Underwriting

Collaborative underwriting is among the most promising and radically innovative models to bring OA to the book publishing domain. Proposed by Frances Pinter of Bloomsbury Academic,⁷³⁹ this model would create a pool of participating institutions to share production costs for forthcoming OA books or OA book collections. Under this system, a consortium of libraries would pool funds to pay for the first-copy costs of monographs selected by members of the consortium. Publishers would propose titles to the consortium, whose members would then decide what to purchase, and cover the first-digital-file production costs. In exchange, the publisher would make the funded book OA in a sub-optimal format. Participating libraries would also obtain the additional benefit of securing access to added-

⁷³⁵ For a detailed list of OA book business models and practical examples of publications endorsing those models, see Open Access Directory (OAD), OA Book Business Models <http://oad.simmons.edu/oadwiki/OA_book_business_models> accessed 13 June 2013.

⁷³⁶ For a list of publishers implementing the dual-edition publishing model, see OAD, OA Book Business Models (n 735).

⁷³⁷ See Open Book Publishers <<http://www.openbookpublishers.com>> accessed 23 August 2013.

⁷³⁸ See Bloomsbury Publishing, Bloomsbury Open Content <<http://www.bloomsbury.com/us/academic/online-resources-and-ebooks/bloomsbury-open-content>> accessed 23 August 2013.

⁷³⁹ See Hugh Look and Frances Pinter, 'Open Access and Humanities and Social Science Monograph Publishing' (2010) 16 *New Review of Academic Librarianship* 90 <<http://www.tandfonline.com/doi/pdf/10.1080/13614533.2010.512244>> accessed 13 June 2013. See also Frances Pinter, 'The Transformation of Academic Publishing in the Digital Era' (OIIOXford, 23 August 2012) <<http://www.youtube.com/watch?v=uOBw03SCLBA>> accessed 13 June 2013.

value versions of the book, including extra metadata, POD and enhanced services or multimedia content. The same enhanced version of the book would be available to the general public for a price, together with printed books, which would be available to purchase separately.

This model has seen practical implementation through the pilot project Knowledge Unlatched.⁷⁴⁰ The project endorses the OA publication of the book via Hathi Trust⁷⁴¹ or OAPEN Library on a Creative Commons Non-Commercial licence against the payment of a title fee to publishers.⁷⁴² The per-library cost of ‘unlatching’ each title decreases as more libraries participate in the project.⁷⁴³

3.4.3.3 Fund-raised OA

Several fund-raised models – that parallel those developed for OA journals – have been discussed or experimented also for OA books. A **commissioning model** – in which the public sets a sum that will be paid to an author to create content on a predefined topic – has been investigated by the medical publisher Amedeo through the Amedeo Challenge, which commissioned OA medical books from experts in the field to be paid through donations.⁷⁴⁴ In a similar fashion, Larry Sanger, Wikipedia cofounder, has proposed a commissioning model in which the public presents an offer to a publisher to write a work on a particular topic and the publisher selects an author to write the book, which is finally published OA.⁷⁴⁵ Besides Kickstarter, which has a publishing projects section,⁷⁴⁶ an interesting **crowdfunding** experiment has been set up by Crowdbooks, a photography book publisher, whose committee selects book submissions, which are then posted for 90 days on the website and

⁷⁴⁰ See Knowledge Unlatched <<http://www.knowledgeunlatched.org>> accessed 13 June 2013. See also Frances Pinter, ‘Knowledge Unlatched – Open Access for Scholarly Books’ (OASPA, Budapest, 19-21 September 2012) <<http://river-valley.tv/media/conferences/coasp-2012/0101-Frances-Pinter>> accessed 13 June 2013.

⁷⁴¹ See Hathi Trust Digital Library <<http://www.hathitrust.org>> accessed 13 June 2013.

⁷⁴² See Knowledge Unlatched, About, How it Works <<http://www.knowledgeunlatched.org/about/how-it-works>> accessed 23 August 2013.

⁷⁴³ Ibid.

⁷⁴⁴ See Amedeo Challenge, The Free Medical Project <<http://amedeochallenge.com>> accessed 23 August 2013. See also Vaughan Bell, Amedeo Challenge Now Open to Small Donations (Mind Hacks, 14 March 2006) <<http://mindhacks.com/2006/03/14/amedeo-challenge-now-open-to-small-donations>> accessed 23 August 2013.

⁷⁴⁵ See Larry Sanger, ‘The Role of Content Brokers in the Era of Free Content’ (*LarrySanger.org*, 9 June 2006) <<http://larrysanger.org/2006/06/the-role-of-content-brokers-in-the-era-of-free-content>> accessed 23 August 2013.

⁷⁴⁶ See Kickstarter, Discover/Publishing <http://www.kickstarter.com/discover/categories/publishing?ref=home_spotlight> accessed 23 August 2013.

published if the submission reaches the funding goal.⁷⁴⁷ Gluejar or Unglue is an example of an OA book publishing business model which is at the intersection of crowdfunding and a **liberation fee** model. Unglue crowdfunds resources to ‘unglue’ previously published works and make them available libre OA.⁷⁴⁸

3.4.3.4 Other OA Books Business Models

The **advertising model** has already been trialled successfully in the book market⁷⁴⁹ and, according to Randal Piker’s article *The Mediated Books*, promises to be a dominant feature of the future of book publishing. Bookboon, for example, finances free and openly available eBooks for students and business professionals through a low number of high quality advertisements, and limited to 15 per cent advertising per book.⁷⁵⁰

Publication fees have also been used to offer OA books. SpringerOpen Books is one example. In order to have an OA publication with SpringerOpen Books, the authors pay a publication fee – which varies depending on the number of pages – at the beginning of the publication process.⁷⁵¹ The peer-reviewed eBooks are freely and immediately available online at Springerlinks upon publication and listed in the DOAB.⁷⁵² Authors retain copyright and the books are published under a CC BY-NC.⁷⁵³ In addition to the free electronic copy, a printed version is also available for purchase.⁷⁵⁴

Miscellaneous forms of **institutional subsidies** have been implemented also for book publishing. As with journals, institutional subsidies may come from universities, governments, foundations, corporations, private societies or other sources.⁷⁵⁵ Also in the case of books, **endowments** have been set up by OA publishers to cover their expenses with the annual interest. Again, cross-subsidised OA books, where the OA publication is funded with the profits from non-OA publications, have been tried out, for example, by

⁷⁴⁷ See Crowdbooks <<http://www.crowdbooks.com>> accessed 23 August 2013 (the project is in a phase of re-launch at the moment).

⁷⁴⁸ See Gluejar <<http://gluejar.com>> accessed 23 August 2013 (linking also to the new Unglue website).

⁷⁴⁹ See OAD, OA Journal Business Models (n 735).

⁷⁵⁰ See Bookboon, Free Textbooks <<http://bookboon.com/blog/en/bookboon-com/about-the-concept-and-books>>.

⁷⁵¹ See SpringerOpen Books <<http://www.springeropen.com/books>> accessed 23 August 2013.

⁷⁵² Ibid.

⁷⁵³ Ibid.

⁷⁵⁴ Ibid.

⁷⁵⁵ For a list of institutions subsidising OA book publishing, see OAD, OA Book Business Models (n 735).

Polimetrica.⁷⁵⁶ Although not all publications have an OA edition, in an increasing number of cases Polimetrica offers a printed edition for sale and an electronic edition OA. **There have also been experiments with value-added service models and temporary OA models for OA books.**

3.5 ASSESSING THE VALUE/METRICS OF OAP

Careful assessment of the metrics and value of OA publications in order to strike a comparison with traditional academic publishing has occupied a large part of the literature, especially in the economics field. As Feess and Scheufen have noted, this literature has addressed its research interests along three lines: evaluation of the economic impacts of alternative publishing models, assessment of the effects of OAP on citation and readership, and investigation of the scholarly community's attitude towards OAP.⁷⁵⁷ Within this theoretical framework, substantial attention has been devoted to reviewing the quality of OAP and its peer-review process, the research impact of OA publications, and the alleged economic, citation and reputational advantage of OAP.

3.5.1 Economic Impact of OAP

Recent economic studies have been showing a positive net value of open access models when compared with other publishing models. A study written by Houghton and Oppenheim for the UK Joint Information System Committee has reviewed the impact on publishing cost and prices of OA business models and argued that in the long run both OA journals and self-archiving platforms will produce positive benefits.⁷⁵⁸ In June 2009, a study authored by John Houghton of the Centre for Strategic Economic Studies at Victoria University in Melbourne, Australia, compared the costs and benefits of three different publication models in the United Kingdom, Netherlands and Denmark.⁷⁵⁹ The report was commissioned by Knowledge Exchange and based on background studies undertaken in the UK by the Joint Information

⁷⁵⁶ See Polimetrica, International Scientific Publisher <http://www.polimetrica.com> accessed 23 August 2013. See also Polimetrica Open Access Manifesto <http://www.polimetrica.com/wp/our-open-access-manifesto> accessed 23 August 2013.

⁷⁵⁷ See Feess and Scheufen, 'Academic Copyright in the Publishing Game' (n 493) 2.

⁷⁵⁸ See John Houghton and Charles Oppenheim, 'The Economic Implications of Alternative Publishing Models' (2010) 28(1) *Prometheus* 41, 41-54. See also Steffen Bernius, 'The Impact of Open Access on the Management of Scientific Knowledge' (2010) 34(4) *Online Information Review* 583, 583-603 <<http://www.emeraldinsight.com/journals.htm?articleid=1876480>> accessed 1 July 2013 (reporting significant cost advantages of OA); Bernius and others, 'Open Access Models and their Implications for the Players on the Scientific Publishing Market' (n 227) 103-115. Cf Steven Harnad, 'The Immediate Practical Implication of the Houghton Report: Provide Green Open Access Now' (2010) 28 (1) *Prometheus* 55-59.

⁷⁵⁹ See John Houghton, 'Open Access – What are the Economic Benefits? A Comparison of the United Kingdom, Netherlands and Denmark' (report prepared for Knowledge Exchange, June 23, 2009) <<http://www.knowledge-exchange.info/Default.aspx?ID=316>> accessed 16 January 2013 [hereinafter Houghton, 'Open Access'].

Systems Committee (JISC),⁷⁶⁰ in the Netherlands by the SURF Foundation,⁷⁶¹ and in Denmark by the Denmark's Electronic Research Library (DEFF).⁷⁶² The studies showed that adopting an open access model to scholarly publications could lead to annual savings of around €70 million in Denmark, €133 million in the Netherlands and €480 million in the United Kingdom. In addition, potential increases in the social returns to R&D resulting from more open access to research findings would largely outweigh the costs.⁷⁶³ More recently, in 2010, another study authored by the same Australian research team concluded that free access to US taxpayer-funded research papers could yield US\$1 billion in benefits.⁷⁶⁴ The study was commissioned to examine the potential payoff of expanding a National Institutes of Health (NIH) policy requiring grantees to post their papers in a free database after a 12-month delay. A bill pending in the US Congress would extend the policy to 11 more agencies and shorten the disclosure delay to 6 months.⁷⁶⁵ The model developed by the Australian team found that, over a period of 30 years from implementation, the benefits of a policy opening access to publicly funded research would exceed the costs (e.g. of archiving) by eight times, or five times counting the benefits accruing in the United States only.⁷⁶⁶ In fact, the study found that one-third of these benefits would spill over to other countries.

⁷⁶⁰ See Houghton, John and others, 'Economic Implications of Alternative Scholarly Publishing Models: Exploring the Costs and Benefits' (report prepared for the Joint Information Systems Committee [JISC], January 2009) <<http://www.jisc.ac.uk/media/documents/publications/rp-teconomicoapublishing.pdf>> accessed 16 January 2013.

⁷⁶¹ See John Houghton, Jos de Jonge and Marcia van Oploo, 'Costs and Benefits of Research Communication: The Dutch Situation' (report prepared for the SURF Foundation, 29 May 2009), http://www.surffoundation.nl/SiteCollectionDocuments/Benefits%20of%20Research%20Communication%20April%202009_%20FINAL_logos2.pdf> accessed 16 January 2013.

⁷⁶² See John Houghton, 'Costs and Benefits of Alternative Publishing Models: Denmark' (report prepared for Denmark's Electronic Research Library [DEFF], 29 May 2009), <http://www.knowledge-exchange.info/Admin/Public/DWSDownload.aspx?File=%2fFiles%2fFiler%2fdownloads%2fDK_Costs_and_benefits_of_alternative_publishing_models.pdf> accessed 16 January 2013.

⁷⁶³ See Houghton, 'Open Access' (n 759) 9, 12-14.

⁷⁶⁴ See John Houghton with Bruce Rasmussen and Peter Sheehan, 'Economic and Social Returns on Investment in Open Archiving Publicly Funded Research Outputs' (report prepared for The Scholarly Publishing & Academic Resources Coalition [SPARC], July 2010) <<http://www.arl.org/sparc/bm~doc/vufnpaa.pdf>>. See also Jocelyn Kaiser, 'Free Access to U.S. Research Papers Could Yield \$1 Billion in Benefits' *Science Insider* (Washington, 30 July 2010) <<http://news.sciencemag.org/scienceinsider/2010/08/free-access-to-us-research-papers.html?rss=1>> accessed 16 January 2013.

⁷⁶⁵ See Federal Research Public Access Act (FRPAA), H.R. 5037 <<http://thomas.loc.gov/cgi-bin/bdquery/z?d111:HR05037:@@P>>. See also Jocelyn Kaiser, 'House Hearing Explores Debate Over Free Access to Journal Articles' *Science Insider* (Washington, 30 July 2010) <<http://news.sciencemag.org/scienceinsider/2010/07/house-hearing-explores-debate.html>> accessed 16 January 2013.

⁷⁶⁶ See Victoria University, Centre for Strategic Economic Studies, Economic and Social Returns on Investment in Open Archiving Publicly Funded Research Outputs, <http://www.cfes.com/FRPAA> (for an online model which makes a subset of the cost-benefit modelling available to the public).

On a slightly different note, Adam argued that in all the economic discussion the cost of not moving to OA is ignored. While the quantitative exercise has focused on the billions that the academic publishing industries contribute to the global economy, no specific economic quantification has addressed the 'constant and huge loss of efficient communication between scholars, and in particular the stifling of innovative interdisciplinary research and cross-discipline synergy of research'.⁷⁶⁷

3.5.2 Citation Advantage

One of the strands of research related to OAP on which economic literature has focused consistent attention is the assessment of the effects of OAP on readership and citation.⁷⁶⁸ [. . .].⁷⁶⁹ A large proportion of the literature seems to find clear evidence of increased citation counts for OA materials.⁷⁷⁰ In one of the first works dedicated to the subject, Lawrence

⁷⁶⁷ See Adams, 'Copyright and Research' (n 220) (evaluating the economic case for scholarly and scientific green OAP, especially whether green OAP poses a significant revenue threat for publishers, and concluding that it does not, as 'it has been demonstrated very clearly in Physics, where close to 100% of the papers published each year are self-archived in the central [arXiv], that Green OA archiving has not had a dramatic effect on the subscription income of physics journal publishers'). In his article, Adams was confuting the publishers' arguments that 'a full-scale tilt into unrestricted Open Access would be too big a shift'. See Kevin Taylor, 'Copyright and Research: an Academic Publisher's Perspective' (2007) 4(2) SCRIPT-ed 23, 233–236 <<http://www.law.ed.ac.uk/ahrc/script-ed/vol4-2/taylor.asp>> accessed 1 July 2013.

⁷⁶⁸ In fact, this is the area where the largest amount OAP related literature has been produced. For a map of the massive literature in question, please see The Open Citation Project - Reference Linking and Citation Analysis for Open Archives, The Effect of Open Access and Downloads ('Hits') on Citation Impact: Bibliography of Studies <<http://opcit.eprints.org/oacitation-biblio.html#most-recent>> accessed 13 June 2013 ('OpCit Project'). See also A Ben Wagner, 'Open Access Citation Advantage: an Annotated Bibliography' (2010) 60 Issues in Science and Technology Librarianship <<http://www.istl.org/10-winter/article2.html>> 1 June 2013; Iain D Craig and others, 'Do Open Access Articles Have Greater Citation Impact?: A Critical Review of the Literature' (2007) 1(3) J of Infometrics 239.

⁷⁶⁹ Chris Armbruster, 'Five Reasons to Promote Open Access and Five Roads to Accomplish it in Social and Cultural Science' (12 November 2005) <<http://ssrn.com/abstract=846824>> accessed 18 January 2013

⁷⁷⁰ Together with the authors cited below, as additional examples of the large amount of literature finding similar citation advantages of OA, see James M Donovan and Carol A Watson, 'Citation Advantage of Open Access Legal Scholarship' (2011) 103 Law Libr J 553 <<http://ssrn.com/abstract=1777090>> accessed 16 January 2013 (focusing on the impact of open access on legal scholarship in three journals at the University of Georgia School of Law and finding that legal scholarship freely available via open access receives 58 per cent more citations than non-open access writings from the same venue); John W Houghton, Colin Steele and Peter J Sheehan, 'Research Communication Costs in Australia: Emerging Opportunities and Benefits' (2006) CSES Working Paper 24 <<http://vuir.vu.edu.au/538/1/wp24.pdf>> accessed 16 May 2013; Stevan Harnad and Tim Brody, 'Comparing the Impact of Open Access (OA) vs. non-OA Articles in the Same Journals' (2004) 10(6) D-Lib Magazine <<http://www.dlib.org/dlib/june04/harnad/06harnad.html>> accessed 2 June 2013 (noting that comparisons between citation counts of individual OA and non-OA articles appearing in the same non-OA journals reveal 'dramatic citation advantages for OA'); Tim Brody and others, 'The Effect of Open Access on Citation Impact' (2004) (National Policies on Open Access (OA) Provision for University Research Output: an International Meeting, Southampton University, Southampton, UK, 19 February 2004) <<http://opcit.eprints.org/feb19oa/brody-impact.pdf>> accessed 2 June 2013. See also, concluding in light of the

found that online OA articles in computer science were cited substantially more than non-OA research outputs.⁷⁷¹ Studying four disciplines, Kristin Antelman found that freely available articles do have a greater citation advantage, with a 'relative increase in citations for open-access articles [ranging] from a low of 45 per cent in philosophy to 51 per cent in electrical and electronic engineering, 86 per cent in political science, and 91 per cent in mathematics.'⁷⁷² Also Norris, Oppenheim and Rowland looked at four different disciplines, including ecology, applied mathematics, sociology and economics, and found a higher citation impact of OA articles, which, in the sample examined, 'had a mean citation count of 9.04 whereas the mean for TA [Toll Access] articles was 5.76.'⁷⁷³ The same authors, however, have noted variations between disciplines, with sociology having the highest citation advantage but the lowest number of OA articles, whereas exactly the opposite is true for ecology.⁷⁷⁴ Hajjem and others reported on the citation advantage of OA articles in a cross-disciplinary analysis covering 10 academic fields – including biology, psychology, sociology, health, political science, economics, education, law, business and management – and more than 1 million articles published across 12 years.⁷⁷⁵ They noted that 'comparing OA and NOA articles in the same journal/year, OA articles have consistently more citations, the advantage varying from 25%-250% by discipline and year' and 'the annual percentage of OA articles is growing significantly faster than NOA within every citation range [. . .] and the effect is greater with the more highly cited articles.'⁷⁷⁶ Eysenbach found that articles published as an immediate OA article on the journal site have higher impact than self-archived or otherwise openly accessible OA articles. Even in a journal that is widely available in research libraries, OA articles are more immediately recognised and cited by peers than non-OA articles published in the same journal. In light of this evidence, Eysenbach concludes that OA is likely to benefit science by accelerating the dissemination and uptake of research findings.⁷⁷⁷ More recently, Xia and Nakanishi have also found that OA articles in general receive more

massive bibliography reviewed and cited by the project that 'recent studies have begun to show that open access increases impact').

⁷⁷¹ Steve Lawrence, 'Online or Invisible?' (2001) 411(6837) *Nature* 521 <<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.6.9535&rep=rep1&type=pdf>> accessed 2 June 2013.

⁷⁷² See Kristin Antelman, 'Do Open-access Articles Have a Greater Research Impact?' (2004) 65 *Coll Res Libr News* 372, 376 <http://eprints.rclis.org/5463/1/do_open_access_CRL.pdf> accessed 2 June 2013.

⁷⁷³ Michael Norris, Charles Oppenheim and Fytton Rowland, 'The Citation Advantage of Open-access Articles' (2008) 59(12) *J Am Soc'y Info Sci & Tech* 1963.

⁷⁷⁴ *Ibid.*

⁷⁷⁵ See Chawki Hajjem and others, 'Ten-year Cross-disciplinary Comparison of the Growth of Open Access and how it Increases Research Citation Impact' (2005) 28(4) *IEEE Data Eng Bull* 39, 39–47 <<http://eprints.ecs.soton.ac.uk/11688/01/ArticleIEEE.pdf>> accessed 1 June 2013.

⁷⁷⁶ *Ibid* 39.

⁷⁷⁷ Gunther Eysenbach, 'Citation Advantage of Open Access Articles' (2006) 4(5) *PLoS Biol* 157.

citations.⁷⁷⁸ As noted by Evans and Reimer, finally, the citation impact of OA is especially evident in developing countries.⁷⁷⁹

More recent literature, however, has qualified these results showing the positive citation impacts of OA publications and contradicted them in part. This is the case of a range of papers from McCabe and Snyder. In a recent work, McCabe and Snyder have shown a zero effect of online access in the aggregate; however, these results also mask substantial heterogeneity across platforms.⁷⁸⁰ In particular, JSTOR shows significantly positive effects, averaging in a 10 per cent increase in citations when doubling JSTOR subscriptions.⁷⁸¹ They conclude that, if a number of attractive features are in place, as in the case of JSTOR, a citation advantage may be present, although still modest compared with the huge results found in the previous literature.⁷⁸² Also, looking at the large JSTOR effects for earlier content published between 1956 and 1975, McCabe and Snyder suggest that 'benefits from online access should be greatest for the content that was heretofore more difficult to access in print'.⁷⁸³ Again, dissimilarities in citation advantage have been shown looking at the JSTOR citation effect in different regions of the world, with positive effects of citing in the United States, no effects in Europe and very positive effects in the rest of the world (almost double that in the United States).⁷⁸⁴ On average, however, when considering whether online availability boosts citations, McCabe and Snyder found that 'the enormous effects found in previous studies were an artifact of their failure to control for article quality'.⁷⁸⁵ They conclude that the 'lack of evidence that free online access performs better, implies that the citation benefits of open-access publishing have been exaggerated by its proponents'.⁷⁸⁶ Therefore,

⁷⁷⁸ Jingfeng Xia and Katie Nakanishi, 'Self-selection and the Citation Advantage of Open Access Articles' (2012) 36 *Online Info Rev* 40.

⁷⁷⁹ See James Evans and Jacob Reimer, 'Open Access and Global Participation in Science' (2009) 323 *Science* 1025 (finding a more modest influence of OA on citations at roughly 8 per cent for recently published works but providing clear support for the ability of OAP 'to widen the global circle of those who can participate in science and benefit from it' with the influence of OA more than twice as strong in the developing world).

⁷⁸⁰ Mark J McCabe and Christopher M Snyder, 'Does Online Availability Increase Citations? Theory and Evidence from a Panel of Economics and Business Journals' (2013) SSRN Working Papers Series <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1746243> accessed 13 June 2013.

⁷⁸¹ *Ibid* 29.

⁷⁸² *Ibid*.

⁷⁸³ *Ibid*.

⁷⁸⁴ *Ibid* 30.

⁷⁸⁵ *Ibid* 1.

⁷⁸⁶ *Ibid* 30-31.

[e]ven if publishing in an open-access journal were generally associated with a 10% boost in citations, it is not clear that authors in economics and business would be willing to pay several thousand dollars for this benefit, at least in lieu of subsidies. Author demand may not be sufficiently inelastic with respect to submission fees for two-sided-market models of the journal market [. . .] to provide a clear-cut case for the equilibrium dominance of open access or for its social efficiency.⁷⁸⁷

Tackling the citation advantage of OAP more directly, Kurtz and others suggest that in astronomy there is a strong early access effect and a strong self-selection bias effect⁷⁸⁸ but there is no indication of any OA effect, because ‘for a person to be in the position to write an article for a core astronomy journal that person must already be in a position to read those journals, and must also be in a position to perform astronomical research.’⁷⁸⁹ Therefore, the authors conclude that ‘the claims that the citation rate ratio of papers openly available on the internet (via ArXiv or some other mechanism) vs those not available through those means is caused by the increased readership of the open articles (this is sometimes called the Lawrence Effect, or the OA advantage) are somewhat overstated, especially for well-funded disciplines with high barriers to entry.’⁷⁹⁰ Other studies in different fields, such as ophthalmology and working papers in economics, have equally shown no evidence of an OA advantage.⁷⁹¹

Again, literature has pointed to the fact that, because downloading articles under OA is free of charge, the number of downloads does not function as a strong proxy for readership.⁷⁹² In this respect, Philip Davis and others have found that, although OA articles

⁷⁸⁷ Ibid 31.

⁷⁸⁸ By ‘early access effect’ Kurtz and others mean that ‘[b]ecause the article appears sooner it gains both primacy and additional time in press, and is thus cited more,’ whereas by ‘self-selection bias,’ they mean that ‘[a]uthors preferentially tend to promote (in this case by posting to the internet) the most important, and thus most citable, articles.’ See Michael Kurtz and others, ‘The Effect of Use and Access on Citations’ 2005 41(6) *Info Process Manage* 1395, 1396 <www.cfa.harvard.edu/~kurtz/kurtz-effect.pdf> accessed 2 June 2013. See also Philip M Davis, ‘Do Open-access Articles Really Have a Greater Research Impact?’ (2006) 67(2) *Coll Res Libr* 103, 104 (noting that OA may not be the cause of greater research impact of articles freely accessible online, but ‘It may be more reasonable to say that author republishing (online and in print) may increase citation impact, especially among highly prestigious journals and authors’).

⁷⁸⁹ Ibid 1401.

⁷⁹⁰ Ibid.

⁷⁹¹ See Van C Lansingh and Marissa J Carter, ‘Does Open Access in Ophthalmology Affect How Articles Are Subsequently Cited in Research?’ (2009) 116 *Ophthalmology* 1425 (concluding that ‘Unlike other fields of science, open access thus far has not affected how ophthalmology articles are cited in the literature’); Tove Faber Frandsen, ‘The effects of Open Access on Un-Published Documents: A Case Study of Economics Working Papers’ (2009) 3(2) *J of Infometrics* 124 (not providing evidence of an open access advantage for working papers in economics).

⁷⁹² See Feess and Scheufen, ‘Academic Copyright in the Publishing Game’ (n 493) 6.

enjoy more downloads, there is no difference between the number of citations in OA and non-OA articles.⁷⁹³ The same conclusions have been supported also by McCabe and Snyder.⁷⁹⁴

Authors have found that OAP tends to increase citation only of the best content. McCabe and Snyder have found that moving from paid to OA increases cites by 8 per cent on average, but OA increases cites to the best content, including top ranked journals or articles in the upper quintile of citation within a volume, and reduces cites to lower-quality content.⁷⁹⁵ In a similar fashion, Gaulé and Maystre have provided theory and evidence suggesting that authors of higher-quality papers find OA relatively more attractive and are more likely to pay for open access, therefore regressing citation on OA yields upward biased estimates. In contrast, the authors find no evidence of a causal effect of open access on citations and explain part of the observed OA citation advantage as the self-selection of higher-quality articles into OA – authors would by preference make higher-quality articles OA.⁷⁹⁶ However, Xia and Nakanishi have come up with opposing results discussing this same issue of self-selection and suggested that articles in high-ranked journals do not have a higher open access rate, and articles in lower-ranked journals have a greater increase in rate of citations if they are freely accessible.⁷⁹⁷ Also Gargouri and others have rebutted the literature, suggesting that the ‘OA advantage’ may not be causal but just a self-selection bias by noting that there is greater OA advantage ‘for the more citable articles, not because of a quality bias from authors self-selecting what to make OA, but because of a quality

⁷⁹³ Philip M Davis, ‘Does Open Access Lead to Increased Readership and Citations? A Randomized Controlled Trial of Articles Published in APS Journals’ (2010) 53 *The Physiologist* 197, 197-201 <<http://www.the-aps.org/mm/Publications/Journals/Physiologist/2010-present/2010/December.pdf>> accessed 18 January 2013; Philip M Davis and others, ‘Open Access Publishing, Article Downloads, and Citations: Randomised Controlled Trial’ (2008) 337 *British Medical Journal* 568, 568-73.

⁷⁹⁴ See Feess and Scheufen, ‘Academic Copyright in the Publishing Game’ (n 493) 6.

⁷⁹⁵ See McCabe and Christopher M Snyder, ‘The Rich Get Richer and the Poor Get Poorer: The Effect of Open Access on Cites to Science Journals Across the Quality Spectrum’ (2013) SSRN Working Papers Series <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2269040> accessed 13 June 2013; McCabe and Christopher M Snyder, ‘Does Online Availability Increase Citations?’ (n) 30 (finding that ‘online access decreases the percentage of articles within a volume that do not receive any cites’ and that, ‘[t]aken together, these results suggest that “superstar” articles as well as articles residing in the “long tail” benefit from online access’).

⁷⁹⁶ Patrick Gaulé and Nicolas Maystre, ‘Getting Cited: Does Open Access Help?’ (2011) 40 (10) *Research Policy* 1332 <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1427763> accessed 13 June 2013

⁷⁹⁷ See Xia and Nakanishi, ‘Self-selection and the Citation Advantage of Open Access Articles’ (n 778).

advantage, from users self-selecting what to use and cite, freed by OA from the constraints of selective accessibility to subscribers only'.⁷⁹⁸

3.5.3 Research Impact

As we have emphasised at length, the main incentive of academic authors is reputation and prestige, therefore in choosing a publication outlet academics are also equally influenced by the prestige of the journals.⁷⁹⁹ Since the 1970s, the so-called 'impact factor' of a journal – which is calculated by several indexes as we have mentioned earlier – has become the most important representative of the journal's prestige and reputation.⁸⁰⁰ As a consequence of these dynamics, one of the key challenges for new entrants to the academic publishing market lies in the ability of newcomers to become prestigious. Looking at the effect of new media and OAP on academic publishing, Gabe Bloch concludes that 'it remains an unresolved question as to whether the new competitors can attain a sufficient level of prestige to seriously rival established print-based publishers'.⁸⁰¹ Although an increasing number of journals covered in the Thomson Reuters' ISI Web of Science citation database are adopting OA distribution models, more of the currently available OA journals rank in the lower half of their subject category, despite the presence of some OA journals in the top ranks.⁸⁰² Indeed, novelty of OA journals represents a hurdle in achieving high impact status.

⁷⁹⁸ See Yassine Gargouri and others, 'Self-selected or Mandated, Open Access Increases Citation Impact for Higher Quality Research' (2010) 5(10) PLoS One <<http://www.plosone.org/article/info:doi/10.1371/journal.pone.0013636>> accessed 13 June 2013.

⁷⁹⁹ See Bernius and others, 'Open Access Models and their Implications for the Players on the Scientific Publishing Market' (n 227) 104-105 (describing the traditional market for scientific publishing as a reputation cycle evolving from the scientific authors and the publishers, where 'both journals and especially authors strive for a maximization of their own reputation'); A Swan and S Brown, 'What Authors Want, The ALPSP Research Study on the Motivations and Concerns of Contributors to Learned Journals. (1999) 12 Learn Publ 170-172.

⁸⁰⁰ The impact factor – a measure of the influence of a journal within its field, which is calculated as the average number of cited articles divided by the number of citable items in a journal in the past two years – came into use during the 1970s through the work of Eugene Garfield. See Eugene Garfield, 'The History and Meaning of the Journal Impact Factor' (2006) 295(1) JAMA 90, 90-93; Eugene Garfield, *Citation Indexes to Science: A New Dimension in Documentation Through Association of Ideas* (1955) 122 Science 108, 108-111 <<http://garfield.library.upenn.edu/essays/v6p468y1983.pdf>> accessed 13 June 2013.

⁸⁰¹ Bloch, 'Transformation in Publishing' (n 586) 648. See also, with special emphasis on difficulties in positioning on the market for new OA journals, Piero Cavaleri and others, 'Publishing an E-Journal on a Shoe String: Is It a Sustainable Project?' (2009) 39(1) Economic Analysis & Policy 89 (finding that running a poorly endowed journal has shown that entry to the field may be easy, but that making it a sustainable enterprise is not straightforward).

⁸⁰² See Marie E McVeigh 'Open Access Journals and the ISI Citation Database: Analysis of Impact Factors and Citation Patterns' (Thomson Scientific 2004) <www.thomsonisi.com/media/presentrep/essayspdf/openaccess_citations2.pdf> accessed 1 June 2013; Kristin Antelman, 'Do Open-access Articles Have a Greater Research Impact?' (2004) 65 Coll Res Libr News 372 (determining that traditional subscription journals enjoyed higher impact factors). In fact, some of the PLoS journals are now amongst those with the highest impact factor in their respective fields. See Oppenheim, 'Electronic Scholarly Publishing and Open Access' (n 220) 586.

Generally, prestige usually requires time to accumulate, which puts recently established OA journals at a disadvantage.⁸⁰³ Additionally, the specific mechanics of academic impact factors add additional hurdles for new born OA journals, as the ISI index begins tracking impact only after a journal has been published for at least five years.⁸⁰⁴ Again, the almost monopoly-like situation of Web of Science aggravates the disadvantaged position of OA journals because WoS accepts only a small percentage of new applicant journals each year.

In any event, although the literature has noted that there is concern over the lack of indexing of OA Journals,⁸⁰⁵ the indexing of OA journals has considerably improved in the last decade. Many of the top OA journals are nowadays ISI indexed. From the slightly more than 200 OA journals included in the Web of Science index in 2003, today over 2,000 OA journals are indexed in Elsevier's Scopus and more than 600 in the Web of Science.⁸⁰⁶ Again, since its launch, the DOAJ has grown from 300 journals to over 10,000. In some cases the top OA journals have even achieved top ranking positions within their specialities. In a recent study, using the average number of citations to the articles in a journal as representative of scientific impact, Björk and Solomon have found results indicating that 'OA journals indexed in Web of Science and/or Scopus are approaching the same scientific impact and quality as subscription journals, particularly in biomedicine and for journals funded by article processing charges'.⁸⁰⁷ Additionally they noted that APC-funded OA journals are on average cited more than other OA journals. They found that, except for journals that had been launched prior to 1996, average citation rates between OA and subscription journals are almost undifferentiated. In particular, 'in medicine and health, OA journals founded in the last 10 years are receiving about as many citations as subscription journals launched during the same period'.⁸⁰⁸

Also, impact seems to be closely connected with discovery of OA publications. Gregory Gordon, the President and CEO of SSRN, has highlighted the issues of discovery that OAP

⁸⁰³ Cf Björk, 'Open Access' (n 484) 9 (noting that 'one way to quickly establish a high prestige for new OA journals is by involving very highly credited researchers with a journal, as is the case with e-Life, which aims to compete in the same league as Nature and Science').

⁸⁰⁴ See Reichman and Okediji, 'When Copyright Law and Science Collide' (n 431) 1463-1464.

⁸⁰⁵ Edward T. Hart, 'Indexing Open Access Law Journals ... or Maybe Not' (2010) 38 Int'l J. Legal Info. 19.

⁸⁰⁶ See Björk, 'Open Access' (n 484) 10. See also David Solomon, Mikael Laakso, Bo-Christer Björk, 'A Longitudinal Comparison of Citation Rates and Growth Among Open Access Journals' (2013) J of Infometrics 642, 642-650 <<http://www.openaccesspublishing.org/apc9/acceptedversion.pdf>> accessed 1 July 2013; Bo-Christer Björk and David Solomon, 'Open Access Versus Subscription Journals: A comparison of Scientific Impact' (2012) 10 BMC Med 73 <www.biomedcentral.com/1741-7015/10/73> accessed 1 July 2013; McVeigh 'Open Access Journals and the ISI Citation Database' (n 802).

⁸⁰⁷ Björk and Solomon, 'Open Access Versus Subscription Journals' (n 806) 73.

⁸⁰⁸ Ibid.

may bring about.⁸⁰⁹ As Gordon argues, more does not mean better but just more and we should think about accessing content when and where we need it – ‘we should be accessing content strategically.’ In this respect, Article Level Metrics (ALMs) – such as downloads, citations and Eigenfactor™ Score⁸¹⁰ – should become familiar research tools for the scholarly researcher in order to make efficient use of the overabundance of scholarly communications. In order to measure the impact of its OA research, PLoS launched Article-Level Metrics (ALMs), a suite of established metrics that measure the overall performance and reach of published research articles.⁸¹¹ However, as Björk noted, even if innovative websites of some OA publishers include alternative article level metrics – such as downloads, mentions in social media or blogs, etc., which are definitely attractive to authors – such article level impact metrics are not yet a factor of importance in academic evaluations.⁸¹²

3.5.4 Quality of Research and Peer Review

One of the primary arguments against open access journals is that they possibly damage, or diminish the quality of, the peer-review system, whose critical role has recently been reinstated by a report of the UK Science and Technology Committee.⁸¹³ In this respect, there is a widely held suspicion that peer-review quality may be inferior in OA journals.⁸¹⁴ Traditional journals often contend that open access peer-review processes are ineffective or that peer review is conducted too quickly, giving articles inadequate scrutiny compared with the peer-review processes of traditional journals. A good example of mainstream criticism of OA in scholarly publishing may be seen in the statement below:

By introducing an author-pays model, Open Access risks undermining public trust in the integrity and quality of scientific publications that has been established over

⁸⁰⁹ See Gregory Gordon, ‘Strategic Access’ (2012) 12(3) LIM 198200-201.

⁸¹⁰ The Eigenfactor™ Algorithm provides a methodology for determining the most important or influential authors and papers in a network. See Gordon, ‘Strategic Access’ (n 809) 200.

⁸¹¹ PLoS, Article-Level Metrics <<http://article-level-metrics.plos.org>> accessed 10 June 2013.

⁸¹² See Björk, ‘Open Access’ (n 484) 12.

⁸¹³ See Science and Technology Committee, *Peer Review in Scientific Publications* (HC 2010-12, 856) <<http://www.publications.parliament.uk/pa/cm201012/cmselect/cmsctech/856/856.pdf>> accessed 16 June 2013 (noting that, despite its flaws, pre-publication peer review is vital and cannot be dismantled). See also Association of American Universities, ‘Scholarly Publishing Roundtable Report and Recommendations’ (12 January 2010) <<http://www.aau.edu/WorkArea/DownloadAsset.aspx?id=10044>> accessed 25 January 2013 (stressing among the core principles developed by a roundtable of experts that ‘[p]eer review must continue its critical role in maintaining high quality and editorial integrity’). Cf Steven Harnad, ‘Harnad Evidence to House of Lords Science and Technology Select Committee on Open Access’ (2013) House of Lords Science and Technology Committee on Open Access, Winter Issue 119-123 <<http://eprints.soton.ac.uk/348479>> 20 December 2013.

⁸¹⁴ See Oppenheim, ‘Electronic Scholarly Publishing and Open Access’ (n 590) 582. See also A Swan and S Brown, Authors and Open Access Publishing, *Learned Publishing* 17(3) (2004) 219, 219–224 (noting that this perception deters some authors from submitting to gold OA journals).

hundreds of years. The subscription model, in which the users pay (and institutions like libraries that serve them), ensures high quality, independent peer review and prevents commercial interests from influencing decisions to publish. This critical control measure would be removed in a system where the author – or indeed his/her sponsoring institution – pays. Because the number of articles published will drive revenues, Open Access publishers will continually be under pressure to increase output, potentially at the expense of quality.⁸¹⁵

Additional claims have been made that OA, because it involves author fees, may degrade quality as journals publish more lower-quality articles to boost revenue.⁸¹⁶ Jeon and Rochet have noted that if the journal's objective was to maximise social welfare, open access would be optimal; however, if the journal has a different objective – such as maximising readers' utility, the impact of the journal, or its profit – open access tends to induce it to choose a quality standard below the socially efficient level.⁸¹⁷ In reconsidering the assumptions of Shavell's proposal of abolishing copyright in scientific works, Frank Müller-Langer and Richard Watt looked at the way in which the distribution of the sources of journal revenue would be altered and the effects upon the quality of journal content.⁸¹⁸ They argue that amount of readership alone cannot take the place of scholarly esteem and reputation, as claimed by Shavell,⁸¹⁹ because scholarly esteem depends also on the quality and impact value of the journal or other publication in which the author publishes. To avoid negative effects, they argue that the impact of quality-adjusted readership on scholarship esteem should be taken into consideration. Attempting to solve the conundrum caused by the possible effects of APCs and OAP models on the quality of published research, McCabe and Snyder have shown that a judicious division of author fees into submission and acceptance fees would mitigate the problem presented by this claim.⁸²⁰

Quality-related concerns regarding OAP have been especially associated with the practice of so-called 'predatory OA'. Predatory OA publishers typically spam professional mailing lists, broadly soliciting submissions to gain additional income. As one article dedicated to this

⁸¹⁵ Elsevier, 'Elsevier's Comments on Evolutions In Scientific, Technical and Medical Publishing and Reflections on Possible Implications of Open Access Journals for the UK' (17 February 2004) 2 as cited in Litman, 'The Economics of Open Access Law Publishing' (n 361) 780.

⁸¹⁶ See McCabe and Snyder, 'Open Access and Academic Journal Quality' (n 509) 453. See also, Mark J McCabe and Christopher M Snyder, A Model of Academic Journal Quality with Applications to Open-Access Journals (2004) NET Institute Working Paper 04-18 <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=619264> accessed 25 June 2013.

⁸¹⁷ Jeon and Rochet, 'The Pricing of Academic Journals' (n 564) 222.

⁸¹⁸ See Müller-Langer and Watt, 'Copyright and Open Access For Academic Works' (n 509) 45-65.

⁸¹⁹ See Shavell, 'Should Copyright Of Academic Works Be Abolished?' (n 438) 301-358.

⁸²⁰ Ibid.

practice in the New England Journal of Medicine noted, ‘these publishers typically have a low acceptance threshold, with a false front or non-existent peer-review process’ and operate using ‘fly-by-night, unsustainable business models’.⁸²¹ The issue is extremely sensitive in terms of the credibility and sustainability of OA business models in the long term as a viable alternative to traditional business models, also in consideration of the fact that even long-standing players in the OA publishing market, such as Hindawi, have been tainted with the accusation of predatory practices.⁸²²

However, the concerns related to lower peer-review standards and falling OA publication quality have been partially removed in recent years, as evidenced by the emergence of high-quality, well-reviewed open access publishers and the growing understanding and expectation that open access content can and should require the same high levels of quality peer review that the more established traditional journals demand.⁸²³ In this regard, the previously mentioned survey of the Study for Open Access project has also discussed perceived poor quality as a barrier to OAP. In fact, this has changed to be one of the untruthful ‘myths’ about OAP. In the survey, actually, researchers tended to disagree with the statements: ‘Open access undermines the system of peer review’ and ‘Open access publishing leads to an increase in the publication of poor quality research’.⁸²⁴

In OAP, the active participation of the scholarly community in the peer-review process offers literature awareness tools superior to (double)-blind peer review through open, documented and/or signed peer reviews, giving readers access to a live and ongoing literature review that usually takes place at a post-publication stage.⁸²⁵ In a recent report,

⁸²¹ See Charlotte Haug, ‘The Downside of Open-Access Publishing’ (2013) 368 N Engl J Med 791, 792-793 <<http://www.nejm.org/doi/full/10.1056/NEJMp1214750>> accessed 10 June 2013.

⁸²² See Jeffrey Beall, ‘Beall’s List of Predatory, Open-Access Publishers (2012 Edition) <<http://carbon.ucdenver.edu/~jbeall/Beall's%20List%20of%20Predatory,%20Open-Access%20Publishers%202012.pdf>> accessed 10 June 2013.

⁸²³ Rohrich and Sullivan, ‘Trends in Medical Publishing’ (n 281) 180.

⁸²⁴ See Dallmeier-Tiessen and others, ‘Highlights from the SOAP Project Survey’ (n 638) 6.

⁸²⁵ See, for a discussion of the so-called open peer review or peer-to-peer review, Kathleen Fitzpatrick and Avi Santo, *Open Review: A Study of Contexts and Practices* (Media Commons Press 2012) <<http://mediacommons.futureofthebook.org/mcpres/open-review>> accessed 15 July 2013; Kathleen Fitzpatrick, *Planned Obsolescence: Publishing, Technology, and the Future of the Academy* (NYU Press 2009) <<http://mediacommons.futureofthebook.org/mcpres/plannedobsolescence>> accessed 15 July 2013; Jane Hunter, ‘Post-publication Peer Review: Opening up Scientific Conversation’ (2012) 6 Frontiers in Computational Neuroscience 63 <<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3431010/pdf/fncm-06-00063.pdf>> accessed 13 June 2013 (discussing right and wrongs of conventional peer-review); Yatan Pal Singh Balhara, ‘Post-publication Review: Will it Hold its Ground?’ (2012) 29(19 Lung India 94 <<http://dx.doi.org/10.4103%2F0970-2113.92383>> accessed 13 June 2013. See also Apoorva Mandavilli, ‘Trial by Twitter: Blogs and Tweets are Ripping Papers Apart within Days of Publication, Leaving Researchers Unsure How to React’ (2011) 469(7330) Nature 286 (discussing how fast the modern online networking tools have made the peer review reaction to validate research results or not).

the Science and Technology Committee also noted the important role of post-publication review through online commentary and of social media tools in communicating published work and discussing its merits and weaknesses.⁸²⁶ The Atmospheric Chemistry and Physics (ACP)⁸²⁷ and the Journal of Interactive Media in Education (JIME)⁸²⁸ are the oldest examples of interactive OAP in making the pre-print and the post-print available for comment. In the case of interactive OAP the bar as regards peer review is raised, rather than lowered, by having pre-approval by the editor, verifying that the article is relevant and substantive, possibly as in the case of JIME a 'private open peer review', and a 'public open peer review' with the article published as discussion papers open to interactive and viewable comments from the referees and the community.⁸²⁹ Subject to a final revision by the author and then acceptance by the journal, the article is published by the editor with the discussion threads, enabling further commentary and serving as a logbook that records the advancement of knowledge claims, while giving due credit to reviewers and discussant.⁸³⁰ Faculty of 1000 Research is also an open access journal offering immediate publication and open peer review.⁸³¹ After being published immediately following a quick internal check for obvious inappropriateness, the articles undergo a post-publication review in an open refereeing process. Two reviewers submit a public review, approving, not approving or approving with reservation the article. If not approved, the authors can review the article following the reviewers' suggestions. If finally approved, the article will be listed in PubMed and other significant databases.

Living Reviews is another OA advanced literature awareness tool based on an ongoing community based process. Living Reviews in Relativity was founded in 1995 by the Max Planck Institute for Gravitational Physics.⁸³² Several other Living Reviews Journals have been

⁸²⁶ See Science and Technology Committee, *Peer Review in Scientific Publications*.

⁸²⁷ See Atmospheric Chemistry and Physics <<http://www.atmospheric-chemistry-and-physics.net>> accessed 13 July 2013.

⁸²⁸ See Journal of Interactive Media in Education <<http://www-jime.open.ac.uk>> accessed 13 July 2013.

⁸²⁹ See Armbruster, 'Open Access in Social and Cultural Science' (n 278) 436-437 (describing the publishing and peer-review models of the two journals).

⁸³⁰ Ibid 347.

⁸³¹ See F1000 Research <<http://f1000research.com>> accessed 13 June 2013.

⁸³² See Living Reviews <<http://www.livingreviews.org>> accessed 13 June 2013. See also Claus Dalchow and others, 'Living Reviews - Innovative Resources for Scholarly Communication Bridging Diverse Spheres of Disciplines and Organisational Structures' in Bob Martens and Milena Dobrev (eds), *ELPUB2006. Digital Spectrum: Integrating Technology and Culture - Proceedings of the 10th International Conference on Electronic Publishing* (ELPUB 2006) <http://elpub.scix.net/cgi-bin/works/Show?121_elpub2006> accessed 13 June 2013; Jennifer Wheary, Lee Wild, Bernard F Schutz, Christina Weyher, 'Living Reviews in Relativity: Thinking and Developing Electronically' (1998) (4(2) JEP) <<http://dx.doi.org/10.3998/3336451.0004.205>> accessed 13 June 2013; Jennifer Wheary and Bernard F Schutz, 'Living Reviews in Relativity: Making an Electronic Journal Live' (1997) 3(1) JEP <<http://dx.doi.org/10.3998/3336451.0003.105>> accessed 13 June 2013.

created since then. Living Reviews are scientific open access journals publishing peer-reviewed articles reviewing the present status of a certain field based on a unique concept that allows authors to update their review articles regularly to incorporate the latest developments. The full history of the article, including revisions, updates and errata is viewable online and it is enhanced by web features, such as movies, downloadable source code, or cross-linking to other resources. Although subscription-based, Faculty of 1000 Prime is another interesting example of collaborative, public and documented peer review of scientific articles after publication. It is a directory of top articles in biology and medicine, as recommended by a faculty of over 5,000 expert scientists and clinical researchers, assisted by 5,000 associates.⁸³³ All these models, which entail post-publication peer review, are illustrations of Clay Shirky's 'publish then filter model'.⁸³⁴ The main assumption here seems to be that each publication adds value to scientific discourse in its own way and filtering and evaluation may take place at post-publication stage, also taking into consideration the decrease in publishing costs that digitisation has brought about.

3.6 CONCLUSIONS

About a decade ago, and building on the experience of the previous ten years, Bo-Christer Björk developed a framework conceptualising the barriers to change to OAP, including the legal framework, IT infrastructure, business models, indexing services and standards, academic reward system, marketing and critical mass.⁸³⁵ Although the move from subscription only academic publishing to OA has been much slower than previously anticipated, as Björk recently noted, the situation has nevertheless improved substantially.⁸³⁶ Building the IT infrastructure, support for indexing, and developing sustainable business models are no longer an issue,⁸³⁷ although long-term digital archiving is still a goal to be achieved by most OA titles.⁸³⁸ However, the academic reward system continues to be a major obstacle for gold OAP.⁸³⁹ Again, both gold and green OA still need

⁸³³ See F1000 Prime <<http://f1000.com/prime>> accessed 13 June 2013. See also 'Revolutionizing Peer Review?' (2005) 8 Nature Neuroscience 397; Hunter, 'Post-publication Peer Review' (n 825); Kathleen Wets, Dave Weedon and Jan Velterop, 'Post-publication Filtering and Evaluation: Faculty of 1000' (2003) 16(4) Learned Publishing 249, 249-258 <<http://dx.doi.org/10.1087/095315103322421982>> accessed 13 June 2013.

⁸³⁴ See Clay Shirky, *Here Comes Everybody: The Power of Organizing Without Organizations* (Penguin Press 2008).

⁸³⁵ See Bo-Christer Björk, 'Open Access to Scientific Publications - An Analysis of the Barriers to Change, (2004) 9(2) Information Research 1 <<http://informationr.net/ir/9-2/paper170.html>> accessed 16 March 2013.

⁸³⁶ See Björk, 'Open Access' (n 484) 5-15.

⁸³⁷ Ibid 8-11.

⁸³⁸ See Michael Seadle, 'Archiving in the Networked World: Open Access Journals' (2011) 29(2) Library Hi Tech 394, 394- 404 (noting that most of the OA titles listed in DOAJ currently have no effective long-term digital archiving).

⁸³⁹ Ibid 11.

more marketing and critical mass, whereas the impediments posed by what subscription publishers allow still have a serious influence on green OA self-archiving.⁸⁴⁰

Plenty of different business models have emerged in the journal publishing sector and the APC model has become dominant among all the others. Although the APC business model fits well with the present market structure, critical views have been voiced. APCs raise an entirely new set of concerns in terms of dead-weight loss on the part of the author or universities which should provide the funds to cover the publication charges. Therefore, the democratic process of access to publishing locations may be undermined as economic power may determine an author's capacity to get published or not. In this respect smaller institutions and authors in the social sciences, which receive limited grants, may face related constraints. Research-intensive institutions may face free-rider problems as they will support most of the financial burdens of the system, while other institutions publishing fewer research outputs will have the same access to research and literature with minimal expenditure. On the other hand, conflicts of interest may taint the publication decision process as fees are paid only upon publication. For this reason, authors have made a case for a submission fee model rather than a publication fee. As an overall consideration, the academic community seems concerned with the long-term sustainability of the APC model, which still deprives academia of financial resources for content that in fact is almost wholly produced within academia itself. In relation to sustainability concerns, hybrid models have been largely criticised as a form of double dipping in university budgets. The interconnected and mass-productive nature of the digital networks may be a useful resource to overcome the limitations of the APC business models, allowing institutions to cooperate in covering publishing costs, or raising money through crowdsourcing or again boosting advertising models which may be especially effective with the aid of digital technologies. Value-added service models may also be an interesting option to implement on a larger scale, as they allow more endowed institutions to receive useful services, while supporting access for institutions with lesser means and also the general public. Indeed, OA book publishing is still in search of one or more sustainable business models that may be more largely endorsed by the academic community, research funders and academic publishers. In this respect, the concerns that have surrounded the APC model for journals seem to have led experimentation in other directions, especially consortial projects and dual-edition publishing. However, commercial publishers have still to react to the emergence of OA in academic book publishing. Once that reaction occurs, it will be easier to understand if conundrums similar to those posed by APCs will also emerge in the book publishing market.

Identifying the most efficient business models to support OAP is also critical in relation to the endorsement of those business models by OA mandate policies. The widespread

⁸⁴⁰ Ibid 12-13.

diffusion of policies endorsing OAP as an institutional mandate for all the researchers affiliated with that institution will be the final subject we will try to address.

PART 4 – OPEN ACCESS PUBLISHING POLICIES

ABSTRACT

To overcome any resistance in the academic community,⁸⁴¹ research funders, both public and private, increasingly support the idea that the research they fund should be openly accessible. The growing number of research institutions that are mandating OAP are doing so on the primary argument that, if public money was spent to fund research, the resulting published research should be available to the public for free and free of any restrictions on permissions to reuse, republish, and create derivatives of open access content. In Section 4.1, we will provide a brief overview of the emergence of OAP mandate policies as well as an international map of the main experiences so far. We will then focus on a few relevant regional and national experiences. Section 4.2 will discuss OA mandate policies in the United States, with special emphasis on the National Institute of Health policy. In Section 4.3, we will look at the increasing emphasis that the European Union is putting on OAP and the global plan to mandate OAP for publicly funded research under the Horizon 2020 programme. Section 4.4 will discuss OA mandate policies in the United Kingdom, looking at the Finch report and the responses that it provoked from the UK government, the Research Councils UK (RCUK)⁸⁴² and the Higher Education Funding Council for England (HEFCE).⁸⁴³ Finally, Section 4.5 will also review some of the literature that has evaluated the effects and reception of OA policies.

4.1 OPEN ACCESS MANDATE POLICIES – AN OVERVIEW

⁸⁴¹ See Willinsky, 'The Stratified Economics of Open Access' (n 576) 59 (noting that universities and research funding services have begun to mandate self-archiving also 'in response to relatively low levels of participation in self-archiving'); (noting that experience has shown that without OA mandate policies spontaneous self-archiving runs around 15 per cent of new published articles). See also Alexander Peukert, 'Ein wissenschaftliches Kommunikationssystem ohne Verlage - zur rechtlichen Implementierung von Open Access als Goldstandard wissenschaftlichen Publizierens [A Scholarly Communication System Without Publishers - On the Legal Implementation of Open Access as the Gold Standard of Scientific Publications]' (2013) SSRN Working paper Series <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2268901> accessed 1 July 2013 (developing a model to legally implement and enforce an obligation to make OA the golden standard in academic publishing and focusing on whether such a framework would violate the fundamental rights of publishers and researchers).

⁸⁴² See Research Councils UK <<http://www.rcuk.ac.uk/Pages/Home.aspx>> accessed 16 September 2013.

⁸⁴³ See Higher Education Funding Council for England (HEFCE) <<http://www.hefce.ac.uk>> accessed 16 September 2013.

In close connection with the emergence of OA repositories and journals, the diffused emergence over the last decade of open-access mandate policies has become another critical contribution to the OAP movement. An **open-access mandate** is a policy – adopted by a research institution, research funder or government – that requires researchers to publish directly in OA publication locations (Golden OA mandate policies) or make their published, peer-reviewed journal and conference papers OA by self-archiving their final, peer-reviewed drafts in a freely accessible central or institutional repository (Green OA mandate policies).⁸⁴⁴ In fact, as well as traditionally more common Green OA mandate policies, Gold OA mandate policies have also been gaining momentum.⁸⁴⁵ For example, recently, mandate policies sponsored by the government in the United Kingdom seem to elect the golden OA route as the preferred mode of publication of publicly funded research. Also in light of the emerging emphasis on Gold OA mandate policies, one relevant characteristic of OA mandate policies is that they do not radically disrupt the traditional

⁸⁴⁴ See Jingfeng Xia and others, 'A Review of Open Access Self-Archiving Mandate Policies' (2012) 12(1) Libraries and the Academy 85; Chris Armbruster, 'Open Access Policy Implementation: First Results Compared' (2011) 24(3) Learned Publishing <<http://ssrn.com/abstract=1927775>> accessed 16 January 2013; Chris Armbruster, 'Implementing Open Access: Policy Case Studies' (October 14, 2010) <<http://ssrn.com/abstract=1685855>> accessed 16 January 2013; Chris Armbruster, 'Implementing Open Access Policy: First Case Studies (2010) 3 Chinese J. Library & Inf. Science 1 <<http://ssrn.com/abstract=1927772>> accessed 16 January 2013; Kate Kruse, 'Open Access Mandates' (July 2009) <http://works.bepress.com/cgi/viewcontent.cgi?article=1009&context=kate_krause> accessed 25 May 2013; Oppenheim, 'Electronic Scholarly Publishing and Open Access' (n 220) 585-586; Jingfeng Xia, 'Assessment of Self-Archiving in Institutional Repositories: Depositorship and Full-Text Availability' (2007) 33(1) Serials Review 14, 14-21; Alma Swan and Sheridan Brown, *Open Access Self-Archiving: An Author Study* (Key Perspectives Ltd 2005); Stephen Pinfield, 'A Mandate to Self Archive? The Role of Open Access Institutional Repositories' (2005) 18 (1) Serials 30, 30-34; Stephen Pinfield, 'Self-Archiving Publications' in G E Gorman and Fytton Rowland (eds), *International Yearbook of Library and Information Management 2004-2005: Scholarly Publishing in an Electronic Era* (Facet, 2004), 118-145; Mark Ware, *Publisher and Library/Learning Solutions (PALS): Pathfinder Research on Web-Based Repositories – Final Report* (Mark Ware Consulting 2004); Theo Andrew, 'Trends in Self-Posting of Research Material Online by Academic Staff' (2003) 37 Ariadne <<http://www.ariadne.ac.uk/issue37/andrew>> accessed 25 May 2013.

⁸⁴⁵ Some authors have criticized the increasing emphasis given to Gold OA rather than Green. John W Houghton and Alma Swan, 'Going for Gold? The Costs and Benefits of Gold Open Access for UK Research Institutions: Further Economic Modelling' (report to the UK Open Access Implementation Group, July 2012) <<http://repository.jisc.ac.uk/610>> accessed 25 May 2013; John W Houghton and Alma Swan, 'Planting the Green Seeds for a Golden Harvest: Comments and Clarifications on "Going for Gold"' (2013) 19 (1/2) D-Lib Magazine <<http://www.dlib.org/dlib/january13/houghton/01houghton.html>> accessed 25 May 2013; Steven Harnad, 'The Green Road to Open Access: A Leveraged Transition' in Gacs A (ed), *The Culture of Periodicals from the Perspective of the Electronic Age* (L'Harmattan 2007) 99-106 <<http://eprints.ecs.soton.ac.uk/13309>> accessed 20 December 2013; Steven Harnad, 'No-Fault Peer Review Charges: The Price of Selectivity Need Not Be Access Denied or Delayed' (2010) 16 (7/8) D-Lib Magazine <<http://eprints.ecs.soton.ac.uk/21348>> accessed 20 December 2013; Steven Harnad, 'Gold Open Access Publishing Must Not Be Allowed to Retard the Progress of Green Open Access Self-Archiving' (2011) 21(3-4) Logos: The Journal of the World Book Community 86-93 <<http://eprints.ecs.soton.ac.uk/21818>> accessed 20 December 2013; Steven Harnad, 'The Optimal and Inevitable outcome for Research in the Online Age' (2012) CILIP Update September 2012 <<http://eprints.soton.ac.uk/342580>> accessed 20 December 2013; Steven Harnad, 'The Postgutenberg Open Access Journal (revised)' in Cope B and Phillips A (eds), *The Future of the Academic Journal* (Chandos 2013) <<http://eprints.soton.ac.uk/353991>> accessed 20 December 2013. See also Yassine Gargouri, Vincent Larivière and Steven Harnad, 'Ten-year Analysis of University of Minho Green OA Self-Archiving Mandate' (2013) <<http://eprints.soton.ac.uk/358882>> accessed 20 December 2013.

scientific publishing market. Commercial publishers are looking increasingly favourably on the option of having funding agencies that provide additional funds to pay publishing fees in exchange for the exclusive rights they have traditionally enjoyed. As Reichman and Okediji have noted, 'obviously the sustainability of this approach depends on the continued availability of financial resources.'⁸⁴⁶

OA mandate policies can be distinguished by content holder, such as institution, programme or funder. In this respect, we can have institutional and programme-based or departmental policies. OA mandates have also been distinguished by type of deposit, such as e-print publication or student dissertation. In fact, policies created for multiple institutions and for theses and dissertations are also on the rise. After institutional policies, requirements for the deposit of theses have become the second largest group of mandate policies.⁸⁴⁷ Mandate policies display a geographic diversity, with many in Australia, Europe and the United States, but also in Africa, Asia and South America.⁸⁴⁸ Complete listings of OA mandate policies worldwide have been compiled by several projects, in particular by the ROARMap⁸⁴⁹ – which is maintained by the University of Southampton and serves also as an online location for policy registration – and the SHERPA/JULIET research funders' OA policy list.⁸⁵⁰ As at 21 August 2013, the total number of mandates recorded in ROARMAP rose to 178 institutional, 48 departmental, 81 funder, 165 thesis mandates, and 6 multi-institutional mandates. In total, the number of mandates is currently 410, with an additional 29 proposed mandates still pending.⁸⁵¹

The earliest OA mandate policy was established in January 2003 by the Department of Electronics & Computer Science (ECS) of the University of Southampton, which has operated a repository and had a programme-based or departmental deposit mandate. Shortly thereafter, the Queensland University of Technology was the first university in Australia to adopt an OA mandate policy in January 2004.⁸⁵² In the following two years, several institutions in Western European countries, including France, Germany and Portugal,

⁸⁴⁶ See Reichman and Okediji, 'When Copyright Law and Science Collide' (n 431) 1464.

⁸⁴⁷ See Xia and others, 'A Review of Open Access Self-Archiving Mandate Policies' (n 844) 88-89.

⁸⁴⁸ Ibid 88.

⁸⁴⁹ See ROARMap <<http://www.eprints.org/openaccess/policysignup>> accessed 27 May 2013.

⁸⁵⁰ See SHERPA/JULIET <<http://www.sherpa.ac.uk/juliet/index.php>> accessed 17 May 2013.

⁸⁵¹ See ROARMap (849).

⁸⁵² See Queensland University of Technology, F/1.3 QUT E-print repository for research output <http://www.mopp.qut.edu.au/F/F_01_03.jsp> accessed 25 August 2013. See also Arthur Sale, 'Comparison of Content Policies for Institutional Repositories in Australia' (2006) 11(4) First Monday <<http://firstmonday.org/ojs/index.php/fm/article/view/1324/1244>> accessed 27 May 2013.

implemented mandatory strategies to promote their repositories.⁸⁵³ The so-called Harvard OA Mandate represented a milestone in the development of OA mandate policies.⁸⁵⁴ In February 2008, the Harvard Faculty of Arts and Sciences decided to establish a compulsory mandate for their programme. Rather than being the product of administrative edicts, the Harvard OA Mandate was the first policy adopted through the democratic process. After the decision of Harvard University, the number of institutional repositories with a mandate policy dramatically increased worldwide. Confirming the effects of the Harvard mandate, Xia and others have observed a peak period of implementation of OA mandate policies in 2009–2010, with a decrease in the second half of 2010.⁸⁵⁵

Next to OA mandate policies at the university level, in 2003 and 2004 the first proposals for OA funder mandate policies appeared in the United Kingdom and United States. The UK Parliament's Science and Technology Committee recommended OA mandate policies for the research funded by the Research Councils and the Government⁸⁵⁶ and the National Institutes of Health (NIH) in the United States equally recommended OA deposit for federal grants recipients in PubMed Central, a particular subject-based repository.⁸⁵⁷ Since then, several research funders worldwide have instituted OA mandates, including for example the Wellcome Trust on 1 October 2005,⁸⁵⁸ the Swiss National Science Foundation on 4 September 2007,⁸⁵⁹ the Canadian Institutes of Health Research on 1 January 2008,⁸⁶⁰ seven of the eight UK research councils by 2008, and more recently the World Bank.⁸⁶¹

⁸⁵³ See Xia and others, 'A Review of Open Access Self-Archiving Mandate Policies' (n 844) 88.

⁸⁵⁴ See Priest, 'Copyright and The Harvard Open Access Mandate' (n 457) 377–430 (arguing also that permission mandates can create legally enforceable, durable nonexclusive licenses); Andrew Albanese, 'Harvard Mandates Open Access' (2008) 133(5) *Library Journal* 16, 16–17.

⁸⁵⁵ See Xia and others, 'A Review of Open Access Self-Archiving Mandate Policies' (n 844) 88.

⁸⁵⁶ See Science and Technology Committee (n 190) paras 117.

⁸⁵⁷ See Policy on Enhancing Public Access to Archived Publications Resulting From NIH-Funded Research, 70 Fed Reg 6891-01 (9 February 2005).

⁸⁵⁸ See Wellcome Trust, Open Access Policy (n 294) (requiring that 'any research papers that have been accepted for publication in a peer-reviewed journal, and are supported in whole or in part by Wellcome Trust funding, to be deposited into PubMed Central (PMC) or UK PMC once established, to be made freely available as soon as possible and in any event within six months of the journal publisher's official date of final publication'). See also Robert Terry and Robert Kiley, 'Open Access to the Research Literature: A Funder's Perspective', in Neil Jacobs (ed), *Open Access: Key Strategic, Technical and Economic Aspects* (OUP 2006).

⁸⁵⁹ See Swiss National Science Foundation, 'Regulations on Information, Valorisation and Rights to Research Results - Provisions on Open Access to Scientific Publications of Projects Sponsored by the SNSF (17 June 2008) <http://www.snf.ch/SiteCollectionDocuments/allg_reglement_valorisierung_e.pdf> accessed 13 June 2013.

⁸⁶⁰ The policy was later amended on 1 January 2013. See Canadian Institutes of Health Research, 'Open Access Policy' <<http://www.cihr-irsc.gc.ca/e/32005.html>> accessed 13 June 2013 (requiring those receiving grant funds from the Institutes to 'make their peer-reviewed publications accessible at no cost within 12 months of publication – at the latest'). See also Michael Geist, 'Canada's Digital Economy Strategy: Toward an Openness

Again, since December 2006 the Australian Research Council has requested that fundees make their work OA or explain the reasons why they do not, although in fact this rule is not enforced.⁸⁶² In a Report issued by the Australian Department of Innovation, Industry, Science and Research in 2008, the Federal Government recommended: 'a specific strategy for ensuring the scientific knowledge produced in Australia is placed in machine searchable repositories to be developed using public funding agencies and universities and drivers'⁸⁶³ and that '[t]o the maximum extent practicable, information, research and content funded by the Australian government including national collections should be made freely available over the Internet as part of the global public commons'.⁸⁶⁴ The review panel recommends making this material available under a creative commons licence.⁸⁶⁵ While calling for its own contribution to OAP, the Australian Government also 'encourages other countries to reciprocate by making their own contributions to the global digital public commons'.⁸⁶⁶

In line with the encouragement of the Australian government, governmental action worldwide seems to be increasingly going in the direction of OA mandate policies. In 2008, OA mandate policies were reaffirmed for the first time at legislative level in the United States. In Europe, OA mandate policies have been increasingly backed up by governmental intervention both at regional level within the Horizon 2020 framework programme and national level,⁸⁶⁷ especially in the United Kingdom under the aegis of the government, the

Framework' (2010) 8 Can. J. L. & Tech. 277 (discussing the Canada Digital Economy Strategy, mentioning other OA mandate policies in Canada, but advocating for more governmental intervention and university action).

⁸⁶¹ See World Bank, 'World Bank Open Access Policy for Formal Publications' (World Bank 2012) <<http://documents.worldbank.org/curated/en/2012/04/16200740/world-bank-open-access-policy-formal-publications>> accessed 13 June 2013. See also 'World Bank Announces Open Access Policy for Research and Knowledge, Launches Open Knowledge Repository' (World Bank News & Broadcast, 10 April 2012) <<http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,contentMDK:23164491~pagePK:64257043~piPK:437376~theSitePK:4607,00.html>> accessed 13 June 2013 (mentioning that, as the first phase of the policy the World Bank launched a new Open Knowledge Repository and adopted a set of CC licences, including a CC-BY licence for content published by the Bank).

⁸⁶² See Kennan, 'Learning to Share' (n 951) 310.

⁸⁶³ Australian Department of Innovation Industry Science and Research, Review of the National Innovation System, *Venturous Australia: Building Strength in Innovation* (Cutler & Company Pty Ltd 2008) 97 <<http://www.innovation.gov.au/Innovation/Policy/Pages/ReviewoftheNationalInnovationSystem.aspx>> accessed 13 June 2013. The recommendations of the Review of the National Innovation System were also backed up by a speech of the Minister for Innovation Kim Carr. See Hon Kim Carr (2008), Review of the National Innovation System Report - Venturous Australia (Committee for Melbourne, URS Australia Southbank, Victoria, 9 September 2008) <<http://archive.innovation.gov.au/ministersarchive2011/Carr/Speeches/Pages/REVIEWOFTHENATIONALINNOVATIONSYSYSTEMREPORT-VENTUROUSAUSTRALIA.html>> accessed 13 June 2013.

⁸⁶⁴ Ibid 98.

⁸⁶⁵ Ibid.

⁸⁶⁶ Ibid.

⁸⁶⁷ For example, very recently the Italian government introduced a provision mandating the public deposit and free use of research which has been funded with at least 50 per cent public money. See Decreto-Legge 8 agosto

UK Research Councils (RCUK) and the Higher Education Funding Council of England (HEFCE). We will discuss these actions in the US and Europe further in the next few pages. Before doing so, still looking at the global international framework, it should be mentioned that OAP policies are also gaining momentum within international organisations. Implementing its Open Access to Scientific Information Strategy,⁸⁶⁸ UNESCO has recently become the first member of the United Nations to adopt an OA policy for its publications.⁸⁶⁹ Starting from July 2013, UNESCO publications are available to users for free download through an OA Repository and released with an open licence allowing translation, adaptation, distribution and re-sharing of UNESCO publications and data.

4.2 UNITED STATES AND NIH POLICY

In the US, several research funding agencies have instituted OA conditions.⁸⁷⁰ One important development in the past decade is that the NIH has created a mandate requiring authors

2013, n 91, 'Disposizioni urgenti per la tutela, la valorizzazione e il rilancio dei beni e delle attività culturali e del turismo' Gazzetta Ufficiale n 186 del 9 agosto 2013, Art 4(2) [Law Decree N 91 of 8 August 2013, 'Urgent Provisions for the Protection, Valorization and Promotion of the Cultural Heritage and Activities and Tourism' Official Gazette N 186 of 9 August 2013, Art 4(2). However, the implementation of the law is still pending. The Decree, which is a governmental act, must be converted into Law by the Parliament within 60 days. The Decree mandated public research centres to make research outputs OA within 6 months, but still the enforcement mechanism of this provision should be tested in practice as the Decree only states that the funding institutions must adopt the necessary measures to implement the OA of publicly funded research. Again, as an additional example, recently Germany has come up with a different regulatory strategy from the Mandate to promote OAP. A new German law, *Zweitveröffentlichungsrecht für Wissenschaftler* [Secondary Publication Rights for Scientists], gives the Green route a statutory basis, by now entitling academics to re-publish after an embargo of 1 year. Any contrary agreement between publisher and author will be invalid. However, some restrictions still apply and the scientific contribution must have been created in the context of at least half publicly funded research. See, for further information and links to legislation, *Zweitveröffentlichungsrecht: Die Richtung stimmt, die Details enttäuschen* (*iRIGHTS info*, 28 June 2013) <<http://irights.info/zweitveroffentlichungsrecht-die-richtung-stimmt-die-details-enttauschen>> accessed 24 September 2013.

⁸⁶⁸ See UNESCO, OPEN Access to Scientific Information (n 534).

⁸⁶⁹ See UNESCO, 'Open Access Policy Concerning UNESCO Publications' (UNESCO 2013) <http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/ERI/pdf/oa_policy_en_2.pdf> accessed 1 July 2013.

⁸⁷⁰ See US Department of Education, Institute of Education Sciences (IES), 'Request for Application' (IES 2009) 11 <http://ies.ed.gov/funding/pdf/2010_84305G.pdf> accessed 13 July 2013 (requiring that publicly funded research is deposited in the Educational Resources Information Center (ERIC) after a one-year embargo); National Center for Atmospheric Research, New Open Access Policy for NCAR Research (*Atmos News*, 20 October 2009) <<https://www2.ucar.edu/atmosnews/news/1059/new-open-access-policy-ncar-research>> accessed 13 July 2013 (requiring that all peer-reviewed research published by its scientists and staff in scientific journals be made publicly available online through its institutional repository); Howard Hughes Medical Institute, 'Research Policies: Public Access to Publications (SC-320)' (11 June 2007) <<http://www.hhmi.org/sites/default/files/About/Policies/sc320.pdf>> accessed 13 July 2013; Howard Hughes Medical Institute, 'HHMI Announces New Policy for Publication of Research Articles' (HHMI News, 26 June 2007) <<http://www.hhmi.org/news/hhmi-announces-new-policy-publication-research-articles>> accessed 13 July 2013.

with grant funding to upload copies to the PubMed Central repository.⁸⁷¹ After the initial voluntary adoption in 2005 that was mentioned earlier, the NIH OA policy was reaffirmed at legislative level by the Consolidated Appropriations Act of 2008,⁸⁷² which instituted an OA mandate for research projects funded by the NIH.⁸⁷³ To date, the NIH policy has enjoyed relative success. The NIH has reported a compliance rate of 75 per cent.⁸⁷⁴ The influence of this mandate has been so strong that many journals prefer to upload NIH funded articles (possibly after an embargo period) or even all articles directly to PubMed Central.⁸⁷⁵ According to Laakso, the NIH mandate policy had such a strong influence that 67 of the top 100 publishers have explicit NIH self-archiving compliance regulations.⁸⁷⁶

However, the NIH OA policy has also triggered the reaction of a group of academic publishers, who have challenged the mandate policy. As Suber noted, every step along the way of the NIH OA mandate policy – the 2004 first proposal by the Congress, the 2005 adoption as a mere request, and the 2008 consolidation of OA into a mandatory requirement for publicly funded research – ‘was strenuously opposed by an aggressive and well-funded publishing lobby’.⁸⁷⁷ The lobbying efforts against the OA mandate policy have also been embodied in a bipartisan bill, the Research Works Act of 2011 (RWA), that *inter alia* was intended to prevent the NIH from continuing to require OA to articles it has

⁸⁷¹ See NIH (n 294). See also Peter Suber, ‘An Open Access Mandate for the National Institutes of Health’ (2008) 2(2) Open Medicine <http://www.openmedicine.ca/article/viewArticle/213/135> accessed 27 May 2013.

⁸⁷² See Consolidated Appropriations Act of 2008 HR 2764 <<http://thomas.loc.gov/cgi-bin/bdquery/z?d110:h.r.02764>> accessed 27 May 2013. See also Eve Heafey, ‘Public Access to Science: The New Policy of The National Institutes of Health in Light of Copyright Protections in National and International Law’ (2011) 15 UCLA J L & Tech 1.

⁸⁷³ See National Institutes of Health, Revised Policy on Enhancing Public Access to Archived Publications Resulting from NIH-Funded Research <<http://grants.nih.gov/grants/guide/notice-files/NOT-OD-08-033.html>> accessed 27 May 2013. See Peter Suber, ‘An Open Access Mandate for the National Institutes of Health’ (2008) 2(2) Open Medicine <http://www.openmedicine.ca/article/viewArticle/213/135> accessed 27 May 2013.

⁸⁷⁴ See Richard Poynder, ‘Open Access Mandates: Ensuring Compliance’ (*Open and Shut*, 18 May 2012) <<http://poynder.blogspot.fi/2012/05/open-access-mandates-ensuring.html>> accessed on 22 March 2013.

⁸⁷⁵ See Björk, ‘Open Access’ (n 484) 12.

⁸⁷⁶ Laakso, ‘Journal Publisher Self-Archiving Policies and the Potential for Growth in Open Access’ (n 471) 7.

⁸⁷⁷ See Suber, Open Access (n 179) 72.

funded.⁸⁷⁸ However, support for the bill seems to be increasingly lacking and legislative action on the RWA may not be taken further.⁸⁷⁹

In any event, despite these reactions, the governmental promotion of OA mandate policies in the United States has progressed steadily. During 2009 and 2010, under the aegis of the Committee on Sciences and Technology of the United States House of Representatives, a Scholarly Publishing Roundtable (SPR) reviewed the state of scholarly publishing and recommended that public access to journal articles arising from research funded by governmental agencies be expanded. In particular, the SPR delivered as its core recommendation that each ‘research funding agency should expeditiously but carefully develop and implement an explicit public access policy that brings about free public access to the results of the research that it funds as soon as possible after those results have been published in a peer-reviewed journal’.⁸⁸⁰ As corollary principles, the SPR has recommended *inter alia* that (i) agencies establish embargo periods between publication and public access, if necessary, (ii) policies be guided by the need to foster interoperability between agencies and (iii) the need to resolve the challenges of long-term digital preservation, and (iv) efforts be made to have the version of record (VoR) as the version to which free access is provided.⁸⁸¹

Furthermore, on 14 February 2013 the Federal Research Public Access Act (FASTR) was introduced in both Houses of Congress as an effort to require US government agencies to improve public access to federally funded research.⁸⁸² The new bill builds upon a previous bill, the Federal Research Public Access Act (FRPA), first introduced as a bipartisan effort on 25 June 2009.⁸⁸³ The FASTR requires that publicly funded research from grants made by US

⁸⁷⁸ See Research Works Act of 2011, HR 3699 <<http://thomas.loc.gov/cgi-bin/query/z?c112:H.R.3699>> accessed 13 July 2013. See also Stephanie Snyder, ‘Free-For-All: Public Access and Publisher Rights Collide in the Fair Copy-Right in Research Works Act of 2009’ (2009) 20 DePaul J. Art, Tech. & Intell. Prop. L. 127 (discussing a previous bill to the same effect); James Boyle, ‘Misunderestimating Open Science’ (*Financial Times*, 24 February 2009) <<http://www.ft.com/intl/cms/s/0/7a110fa6-0219-11de-8199-000077b07658.html#axzz21qjIYOlp>> accessed 13 June 2013.

⁸⁷⁹ See Richard Poynder, ‘Scholarly Publishing: Where is Plan B?’ (*Open and Shut*, 1 March 2012) <<http://poynder.blogspot.fi/2012/03/scholarly-publishing-where-is-plan-b.html>> accessed on 22 March 2013.

⁸⁸⁰ Association of American Universities, ‘Scholarly Publishing Roundtable Report and Recommendations’ (n 813) ii.

⁸⁸¹ Ibid.

⁸⁸² See Fair Access to Science and Technology Research Act of 2013, HR [. . .] <<https://www.eff.org/sites/default/files/fastr.pdf>> accessed 26 February 2013. See also Peter Suber, ‘Major New Bill Mandating Open Access Introduced in Congress (Google+, 14 February 2013) <<https://plus.google.com/109377556796183035206/posts/FZFvDhBLTzE>> accessed 13 July 2013.

⁸⁸³ See Federal Research Public Access Act of 2009, S 1373 <<http://thomas.loc.gov/cgi-bin/query/z?c111:S.1373>> accessed 13 June 2013. See also Adi Kamdar and Corynne McSherry, ‘New Bill Helps Expand Public Access to Scientific Knowledge’ (*Electronic Frontier Foundation*, 15 February 2012)

government agencies with a funding turnaround greater than 100 million dollars annually be available OA on the Internet within six months of publication in a peer-reviewed journal. Eleven government agencies would be affected: The Departments of Agriculture, Commerce, Defense, Education, Energy, Health & Human Services, Homeland Security, and Transportation, as well as the Environmental Protection Agency, the National Aeronautics and Space Administration, and the National Science Foundation. In addition to the requirements included in the FRPA Act, the new bill ‘calls for common deposit procedures among agencies; for formats that enable productive reuse, such as computational analysis; and for examining the potential of open licensing for the papers, to enable reuse by the public.’⁸⁸⁴ Meanwhile, on 22 February 2013, the White House Office of Science and Technology issued a policy directive that extends an OA mandate to publicly funded research to more agencies than the FASTR. The directive gives Federal agencies with an annual spending of more than 100 million dollars in Research and Development six months to set up policies for making scientific publication and data they funded OA to the public within 12 months from publication.⁸⁸⁵

4.3 EUROPE AND HORIZON 2020

In a similar fashion to other international jurisdictions, the European Union has actively promoted OAP of publicly funded research through OA mandate policies. Since December 2006, the European Research Council (ERC) Scientific Council stressed ‘the attractiveness of policies mandating the public availability of research results – in open access repositories – reasonably soon (ideally, 6 months, and in any case no later than 12 months) after publication’.⁸⁸⁶ In 2012, the ERC issued a set of guidelines supporting OA to published research outputs as a fundamental part of its mission and providing, *inter alia*, that the ERC

<<https://www.eff.org/deeplinks/2013/02/new-bill-helps-expand-public-access-scientific-knowledge>> accessed 26 February 2013; Peter Suber, ‘FRPAA Introduced in the US House of Representatives’ (2010) 145 SPARC Open Access Newsletter <<http://www.earlham.edu/~peters/fos/newsletter/05-02-10.htm#frpaa>> accessed 13 June 2013. Cf Steven Harnad, ‘Public Access to Federally Funded Research (Harnad Response to US OSTP RFI)’ (*Open Access Archivangelism* 865/866, 1 January 2012) <<http://openaccess.eprints.org/index.php?/archives/865-.html>> accessed 25 May 2013;

⁸⁸⁴ See Scholarly Publishing @ MIT Libraries, Research Funder Policies and Related Legislation, Fair Access to Science and Technology Research <<http://libraries.mit.edu/scholarly/publishing/research-funders/#OApol>> accessed 13 July 2013.

⁸⁸⁵ See White House Office of Science and Technology, Memorandum for the Heads of Executives Departments and Agencies, Increasing Access to the Results of Federally funded Scientific Research (23 February 2013) <http://www.whitehouse.gov/sites/default/files/microsites/ostp/ostp_public_access_memo_2013.pdf> accessed 13 June 2013. See also Peter Suber, ‘Second Shoe Drop: New White House Directive Mandates OA’ (Google+, 22 February 2013) <<https://plus.google.com/109377556796183035206/posts/8hzviMJvHJ>> accessed 13 July 2013.

⁸⁸⁶ See European Research Council, ‘ERC Scientific Council Statement on Open Access’ (2006) <http://erc.europa.eu/sites/default/files/press_release/files/erc_scc_statement_2006_open_access_0.pdf> accessed 14 June 2013.

‘requires electronic copies of any research papers and monographs that are supported in whole, or in part, by ERC funding to be made publicly available as soon as possible, and no later than six months after the official publication date of the original article’.⁸⁸⁷ ERC also encourages funded researchers to make their publications available in OA discipline-specific repositories, recommending the use of Europe PubMed Central for life science and ArXiv for physical science and engineering.⁸⁸⁸

Besides the ERC OA conditions, the European Commission has set up a global plan to make OAP the norm for research receiving funding from its Horizon 2020 programme – the EU’s Research and Innovation funding programme for 2014-2020.⁸⁸⁹ In July 2012, the European Commission released the announcement *Scientific Data: Open Access to Research Results Will Boost Europe’s Innovation Capacity* making the commitment to turn OAP to ‘scientific publications a general principle of Horizon 2020’ and making 60 per cent of European publicly funded research articles available OA by 2016.⁸⁹⁰ As of 2014, all articles produced with the €87 billion annual investment in R&D from Horizon 2020 will have to be OA. This announcement leaves the way open to both Gold and Green OA. Horizon 2020 mandated OA should be achieved either through immediate open access by the publisher – with publication costs potentially eligible for reimbursement by the European Commission – or through deposit in an OA repository with a standard maximum 6 month embargo, which can

⁸⁸⁷ European Research Council, ‘Open Access Guidelines for Researchers Funded by the ERC’ (June 2012) http://erc.europa.eu/sites/default/files/press_release/files/open_access_policy_researchers_funded_ERC.pdf accessed 14 June 2014.

⁸⁸⁸ Ibid (noting also that OA infrastructures in social sciences and humanities are under review and recommendations will be issued in the future). See also European Research Council, ‘Open Access Status of Journal Articles from ERC-Funded Projects (June 2012)’ <http://erc.europa.eu/sites/default/files/document/file/open_access_study_status_journal_articles_ERC_funded_projects.pdf> accessed 14 June 2012.

⁸⁸⁹ See Horizon 2020, The Framework Programme for Research and Innovation <http://ec.europa.eu/research/horizon2020/index_en.cfm> accessed 13 June 2013.

⁸⁹⁰ European Commission, ‘Scientific Data: Open Access to Research Results Will Boost Europe’s Innovation Capacity’ (Press Release IP/12/790, 17 July 2012) <http://europa.eu/rapid/press-release_IP-12-790_en.htm> accessed 15 June 2013. See also Neelie Kroes, ‘Open infrastructures for Open Science’ (Opening Science Through e-Infrastructures European Federation of Academies of Sciences and Humanities Annual Meeting, Rome, 11 April 2012) (a speech of the Vice President of the European Commission responsible for the Digital Agenda reinforcing the commitment of the EU to go OA and Open Data) <http://europa.eu/rapid/press-release_SPEECH-12-258_en.htm?locale=en> accessed 13 July 2013. For additional commentaries on the EU OA commitment, see Guinnessy, ‘Europe Moves Closer to Open-Access Publishing’ (n 281) 22-24 (also discussing the challenges and the reaction of authors and industry to a move to full gold OA publishing as promoted by the European and UK mandate policies); Elizabeth Gibney, ‘Muscle from Brussels as Open Access Gets an €80bn Boost’ (*THE – Times Higher Education*, 17 May 17 2012) <<http://www.timeshighereducation.co.uk/story.asp?sectioncode=26&storycode=419949&c=1>> accessed 23 February 2013 (with comments from EU officials, academics and OA advocates on the proposal); Dugie Standeford, ‘Changes Coming For Open Access To Research In Europe’ (*Intellectual Property Watch*, 16 April 2012) <http://www.ip-watch.org/2012/04/16/changes-coming-for-open-access-to-research-in-europe/?utm_source=daily&utm_medium=email&utm_campaign=alerts> accessed 18 January 2013.

be extended to 12 months for articles in the fields of social sciences and humanities.⁸⁹¹ In this respect, the announcement clarifies the Commission Regulation Proposal laying down the rules for participation and dissemination in Horizon 2020, which has been under discussion since November 2011.⁸⁹²

Together with the proposals related to the Horizon 2020 programme, grant recipients working in certain areas under the 2007-2013 European Commission's Seventh Framework Programme (FP7) have already been requested to comply with OA policies.⁸⁹³ In 2008, the Commission launched an online project – covering around 20 per cent of the FP7 programme budget in certain areas – to provide 'unrestricted online access to EU-funded research results, primarily research articles published in peer reviewed journals, after an embargo period of between 6 and 12 months'.⁸⁹⁴ Also, in the case of the pilot project under FP7, Gold OA fees, including 'Open Access publishing' and 'author pays' fees, are eligible for reimbursement.⁸⁹⁵

4.4 UNITED KINGDOM

⁸⁹¹ See European Commission, 'Scientific Data' (n 890).

⁸⁹² See Commission Proposal for a Regulation of the European Parliament and of the Council laying down the rules for participation and dissemination in 'Horizon 2020 – the Framework Programme for Research and Innovation (2014-2020) COM(2011) 810 final <[http://ec.europa.eu/research/horizon2020/pdf/proposals/proposal_for_a_regulation_of_the_european_parliament_and_of_the_council_laying_down_the_rules_for_the_participation_and_dissemination_in_horizon_2020%20\(2014-2020\).pdf#view=fit&pagemode=none](http://ec.europa.eu/research/horizon2020/pdf/proposals/proposal_for_a_regulation_of_the_european_parliament_and_of_the_council_laying_down_the_rules_for_the_participation_and_dissemination_in_horizon_2020%20(2014-2020).pdf#view=fit&pagemode=none)> accessed 15 June 2015. See also COMMUNIA International Association on the Public Domain, 'Position on EC Horizon 2020 Open Access Policy' (November 2012) <http://www.communia-association.org/wp-content/uploads/2012/11/Communia_positiononECHorizon2020OpenAccesspolicy1.pdf> accessed 13 June 2013.

⁸⁹³ Commission, 'Decision on the adoption and a modification of special clauses applicable to the model grant agreement adopted on 10 April 2007 in the context of the implementation of the Seventh Framework Programmes of the European Community (2007-2013) and the European Atomic Energy Community (2007-2011), and to the model grant agreement for 'frontier' research actions and to the Marie Curie model grant agreements adopted on 16 April 2007 in the context of the implementation of the Seventh Framework Programme of the European Community (2007-2013) C(2007) 4408 final <http://ec.europa.eu/research/20press/2008/pdf/decision_grant_agreement.pdf> accessed 13 June 2013. See also European Commission, Research and Innovation, Science in Society, Policy Initiatives, Open Access, Open Access in FP7 <<http://ec.europa.eu/research/science-society/index.cfm?fuseaction=public.topic&id=1300>> accessed 15 June 2013.

⁸⁹⁴ See European Commission, 'Better Access to Scientific Articles on EU-funded Research: European Commission Launches Online Pilot Project' (Press Release IP/08/1262, 20 August 2008), <<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/08/1262&format=HTML&aged=0&language=EN&guiLanguage=en>> accessed 13 June 2013. See also 'Better Access to Scientific Articles on EU-funded Research: Online Pilot Project' (2008) 240 EU Focus 24.

⁸⁹⁵ See FP7 Grant Agreement – Annex II: General Conditions (15 June 2009) art II.16.4 (noting that '[f]or other activities not covered by paragraphs 1 and 2, inter alia, management activities, training, coordination, networking and dissemination (*including publications*), the contribution may reach a maximum of 100% of the total eligible costs') <https://docs.google.com/viewer?url=ftp%3A%2F%2Fftp.cordis.europa.eu%2Fpub%2Ffp7%2Fdocs%2Ffp7-ga-annex2-v3_en.pdf> accessed 15 June 2013 (emphasis added).

The United Kingdom has increasingly become a major player in the international movement towards OAP. As early as August 2004, the UK House of Commons Science and Technology Committee, after noting the unsatisfactory state of the academic publishing market, recommended to the UK Government that funding bodies should require that authors retain copyright;⁸⁹⁶ and deposit a copy of their final papers in suitable repositories;⁸⁹⁷ and finally, funding bodies should make funds available to pay publication charges in open access journals (author-pays model).⁸⁹⁸

In 2011, as part of its *Innovation and Research Strategy for Growth*, the UK government announced that it was 'committed to ensuring that publicly-funded research should be accessible free of charge'.⁸⁹⁹ As part of this commitment, the government has helped establish an independent working group chaired by Janet Finch to consider how to improve access to research publications, including publicly funded research.

4.4.1 Finch Report

The Finch Report has established itself as a key document in the UK strategy for expanding OAP to scientific literature.⁹⁰⁰ The report is the outcome of the work of the Working Group on Expanding Access to Published Research Findings, chaired by Dame Janet Finch.

As a core suggestion, the recommendations included in the Finch report advocate a shift from a reader-pays to an author-pays system in academic publishing. Finch recommended a clear policy direction in the UK towards support for Gold OAP, where publishers receive their revenues from authors rather than readers, and so research articles become freely accessible to everyone immediately upon publication, funded by Article Processing Charges (APCs), as the main vehicle for the publication of research, especially when it is publicly funded.⁹⁰¹ In order to cover these APCs, Finch concluded that the Research Councils and other public sector funding bodies should come up with relevant arrangements.⁹⁰² In addition, Finch paved the way for the establishment of dedicated publication funds within individual universities to cover the APCs, calling for the development of policies and

⁸⁹⁶ Science and Technology Committee (n 190) paras 126.

⁸⁹⁷ Ibid paras 117.

⁸⁹⁸ Ibid paras 165.

⁸⁹⁹ See Department for Business, Innovation and Skills, *Innovation and Research Strategy for Growth* (Cm 8329, 2011) 76-78 <<http://www.bis.gov.uk/assets/biscore/innovation/docs/i/11-1387-innovation-and-research-strategy-for-growth.pdf>> accessed 16 January 2013.

⁹⁰⁰ Working Group on Expanding Access to Published Research Findings, 'Accessibility, Sustainability, Excellence: How to Expand Access to Research Publications' (June 2012) (Finch Report) <<http://www.researchinfonet.org/publish/finch>> accessed 16 January 2013

⁹⁰¹ Ibid 7.

procedures regarding OAP and how it is funded.⁹⁰³ Meanwhile, pricing of big deals and other subscriptions should take into account the shift towards Gold OA and the resultant changes in revenues provided to publishers.

If, in Finch's view, Gold OA becomes the main route for OA, Green OA seems to retain a residual role. Although Finch calls for the development of the infrastructure of subject and institutional repositories, the Report, nonetheless, noted that these play a valuable role but 'complementary to formal publishing', particularly in providing access to research data and to grey literature, including reports, working papers, theses and dissertations, and in digital preservation.⁹⁰⁴ The report seems to prioritise the sustainability of subscription-based journals, rather than aiming at increasing access through Green OA, by stressing that embargo periods should never be less than twelve months, if an appropriate level of dedicated funding is not provided to meet the costs of OAP.⁹⁰⁵

Finch also called for enhanced libre OA by noting that 'support for open access publication should be accompanied by policies to minimise restrictions on the rights of use and re-use, especially for non-commercial purposes'.⁹⁰⁶ The implementation of libre OA does imply the adoption of licences that allow free re-use of content. In fact, Finch does not take a specific stand on the issue of licensing, but noted that concerns have been raised regarding the adoption of too liberal an arrangement and seems to second those concerns. We will return to the question of OA licensing options in Section 4.4.3 below, when discussing the RCUK OA policy.

Finch finally briefly tackles the issue of OAP for books and monographs, initially noting that moves towards digital and open access publishing have been much slower here than with journal articles. Relatively few research monographs are as yet available online, and there has been relatively little progress towards the publication of open access books. Mindful of the unsettled state of OAP for books and monographs, Finch does not promote any specific policy recommendation in the field but only urges that 'universities, funders, publishers, and learned societies should continue to work together to promote further experimentation in open access publishing for scholarly monographs'.⁹⁰⁷

⁹⁰² Ibid.

⁹⁰³ Ibid 9.

⁹⁰⁴ Ibid 8.

⁹⁰⁵ Ibid 10.

⁹⁰⁶ Ibid 7.

⁹⁰⁷ Ibid.

The Finch Group met again in September 2013 to review progress in the implementation of its recommendations and, in addition, the Research Information Network (RIN) was commissioned to gather evidence from key stakeholder groups in preparation for that meeting.⁹⁰⁸ In response to the Finch Report: Survey of Progress, the Open Access Scholarly Publishers Association has submitted a set of comments asking the relevant stakeholders to

put in place arrangements to gather and analyse reliable, high quality and agreed indicators of key features of the changing research communications landscape; [. . .] keep under review the position of learned societies that rely on publishing revenues to fund their core activities, the speed with which they can change their publishing business models, and the impact on the services they provide to the UK research community; [. . .] support for open access publication should be accompanied by policies to minimise restrictions on the rights of use and re-use, especially for non-commercial purposes, and on the ability to use the latest tools and services to organise and manipulate text and other content; [. . .] establish effective and flexible mechanisms to enable universities and other research institutions to meet the costs of APCs [. . .]; and efficient arrangements for payment, minimising transaction costs while providing proper accountability.⁹⁰⁹

In any event, it is worth noting that the move to gold OA, endorsed by the Finch Report, and then by the UK government and RCUK, has worried many. Expressing her concern, which seems to be shared also by others,⁹¹⁰ Joanna Ptolomey has noted: '[c]oming down too heavily on the side of Gold OA and implementing policy so quickly based upon this dismisses the value in the Green institutional repository route. Why not keep a hybrid Green/Gold route for a while?'⁹¹¹ In an important recent study Gargouri and others criticise a key assumption of the Finch report. Finch has made a case for a privileged Gold route based upon the hypothesis that '[t]he [Green OA] policies of neither research funders nor universities themselves have yet had a major effect in ensuring that researchers make their

⁹⁰⁸ See Research Information Network (RIN), Finch Report <<http://www.researchinfonet.org/publish/finch>> accessed 21 June 2013.

⁹⁰⁹ OASPA's response to Request for Input – Finch Report: Survey of Progress, 14 June 2013, Submitted by Caroline Sutton on behalf of the Open Access Scholarly Publishers Association (OASPA) (21 June 2013) <<http://oaspa.org/oaspas-response-to-request-for-input-finch-report-survey-of-progress/#more-1170>> accessed 21 June 2013.

⁹¹⁰ See, for example, 'What to Do with Open Access Funding in Physics and Astronomy' (In the Dark, 5 March 2013) <<http://telescoper.wordpress.com/tag/finch-report>> accessed 13 June 2013 (noting 'instead of splashing money around for Gold Open Access, I think RCUK should mandate that all its research be published in Green Open Access mode').

⁹¹¹ See Joanna Ptolomey, 'Finch and Open Access: Debating the Future of Academic Publishing' (2013) 37(1) Online Searcher 31.

publications accessible in institutional repositories.⁹¹² Gargouri and others, as we will discuss in more detail in Section 4.5, rebuts this point by noting that ‘Green Open Access Mandates do have a major effect, and the stronger the mandate, the stronger the effect’.⁹¹³ Hence, they conclude that the RCUK, or any other concerned institution worldwide, ‘would be well advised to adopt the strongest Green OA mandates and to integrate institutional and funder mandates’.⁹¹⁴ Paul Guinnessy reports the concern of academics and publishers arguing that the pressure to accept and publish papers faster in greater quantities may compromise the integrity of the editorial and peer-review process and, in the long term, publishing more articles that produce fewer citations will lower motivations for authors to submit to a given journal.⁹¹⁵ Bailey and Bell have also voiced their concern about another aspect of the economics of the model proposed by Finch. It is unclear whether OA will lead institutions in all fields to cancel subscriptions to journals, which should release enough money to pay for the APCs.⁹¹⁶ Bailey and Bell stressed that this may not be the case in the legal field for example. Subscriptions to non-UK journals, which may not be OA, and journals published for a practitioner audience, which are not OA, cannot be cancelled.⁹¹⁷ Additionally, the saving on UK academic journals will probably not release enough money to pay for the APCs, as, for example, the Cambridge Law Journal online institutional subscription is £87, whereas the current Cambridge Law Journal APC fee is £850 per article.⁹¹⁸

4.4.2 Governmental Response and Other Open Access Projects

The UK government responded to the Finch Group Report in July 2012 by accepting all the proposals in the report, with the exception of one point on the reduction of VAT for e-journals.⁹¹⁹ In accepting the Finch proposal, the government has expressed its preference for

⁹¹² Finch Report (n 900) 82 (7.54).

⁹¹³ Yassine Gargouri and others, ‘Testing the Finch Hypothesis on Green OA Mandate Ineffectiveness’ (Open Access Week 2012, 22-28 October 2012) 1 <<http://eprints.soton.ac.uk/344687>> accessed 23 August 2013.

⁹¹⁴ Ibid.

⁹¹⁵ See Guinnessy, ‘Europe Moves Closer to Open-Access Publishing’ (n 281) 22-23.

⁹¹⁶ See Stephen Bailey and John Bell, ‘Memorandum on Open Access Implementation’ (submitted to BIS, 7 February 2013) 4-5 (in file with the author).

⁹¹⁷ Ibid 4.

⁹¹⁸ Ibid.

⁹¹⁹ See Letter from David Willetts, Minister, Department for Business, Innovation & Skills (BIS), to Dame Janet Finch, ‘Government Response to the Finch Group Report: “Accessibility, sustainability, excellence: how to expand access to research publications”’ (URN 12/975, 16 July 2012) <http://www.bis.gov.uk/assets/biscore/science/docs/12-975-letter-government-response-to-finch-report-research-publications.pdf>> accessed 16 January 2013.

the ‘gold’ over the ‘green’ model, especially where the research is taxpayer funded.⁹²⁰ In the response letter to Finch, the government also noted that embargo periods should be short where publishers do not offer the preferred Gold OA route coupled with APCs.⁹²¹ If the APC funds are not available, however, publishers may insist on a longer embargo period that should be up to 12 months in the STEM sector and up to 24 months in other disciplines.⁹²²

Apart from entirely endorsing Finch’s conclusions, the UK government responded to the report by also investing money. It has set aside an initial fund of 10 million pounds, to enable research-intensive UK institutions to kick-start the process of developing policies and setting up funds to meet the costs of APCs.⁹²³

The government support to OAP goes hand in hand with the promotion of open data through establishing a Research Transparency Sector Board to consider how to develop policies on access to research data.⁹²⁴ Among other key initiatives in the domain of OA, with the support of the Open Knowledge Foundation, the UK government announced the launch of the data.gov.uk project, a collection of more than 2,500 UK government databases – now freely available to the public for consultation and re-use.⁹²⁵

4.4.3 RCUK

Using the findings of the Finch Report – and the government’s response to Finch – to further develop the policies that they had in place since 2005, the RCUK announced a new OA policy in July 2012, which was finally consolidated in the RCUK Policy on Open Access and

⁹²⁰ Ibid. See also Guinnessy, ‘Europe Moves Closer to Open-Access Publishing’ (n 281) 25. For a negative response to the governmental endorsement of the Gold OA model, see Steven Harnad, (2013) ‘Follow-Up Comments for BIS Select Committee on Open Access’ (2013) UK Parliament Publications and Records, Spring Issue <<http://eprints.soton.ac.uk/352011>> accessed 20 December 2013; Steven Harnad, ‘Harnad Evidence to BIS Select Committee Inquiry on Open Access’ (2013) *Written Evidence to BIS Select Committee Inquiry on Open Access*, Winter Issue <<http://eprints.soton.ac.uk/348483>> accessed 20 December 2013; Robin Osborne, ‘Why Open Access Makes No Sense’ in Nigel Vincent and Chris Wickham (eds), *Debating Open Access* (British Academy 2013) 97 (noting that ‘under Gold OA there is a risk that the amount of work published increases and the quality decreases as publishers seek to maximize income from APCs’). Cf Bell, ‘The Future of Legal Research’ (n 682) (considering the implications for academic lawyers and legal publishers of the Government’s response to the Finch Report and pleading for submission charges, rather than APCs).

⁹²¹ Ibid.

⁹²² Ibid.

⁹²³ See UK Government, Department for Business, Innovation & Skills, Announcement, Government Invests £10 million to Help Universities Move to Open Access (7 September 2012) <<https://www.gov.uk/government/news/government-invests-10-million-to-help-universities-move-to-open-access>> accessed 15 June 2013.

⁹²⁴ See Cabinet Office, *Open Data White Paper: Unleashing the Potentials* (Cm 8353, 2012) <https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/78946/CM8353_acc.pdf> accessed 13 June 2013. See also Royal Society, *Science as Open Enterprise* (n 161) (inspiring the government with its analysis of issues relating to research data).

⁹²⁵ See Data.gov.uk, Opening up Government <www.data.gov.uk> accessed 16 January 2013.

Supporting Guidance, last updated in May 2013.⁹²⁶ Essentially, the new RCUK OA policy, which has been in effect since April 2013, requires that peer-reviewed papers that report on research funded by the Research Councils be made OA.⁹²⁷ Additionally, all papers including research publicly funded by RCUK must include a statement on how the underlying research materials such as data, samples or models can be accessed.⁹²⁸ From the outset, the RCUK OA Policy states ‘a preference for immediate Open Access with the maximum opportunity for re-use’.⁹²⁹ If Gold OA is an option available from the publishers and APC funds are available from the research funder, immediate Gold OA is the route that RCUK mandates to be followed. If the publisher does not offer Gold OA, the ‘final accepted manuscript’⁹³⁰ must be made available in a repository (Green OA) within 6 months of publication, which are extended to 12 in the case of papers in the arts, humanities and social sciences, mainly funded by AHRC and ESRC. If the publishers offer Gold OA but APC funds are not available, the published article must be made Green OA after 12-24 months, still depending on whether the funding is for arts, humanities and social science papers, which enjoy a longer embargo.

As a key element of the implementation of the RCUK OA Policy, the Research Councils have introduced a new funding mechanism from April 2013, consisting of a block grant to universities and eligible research organisations to cover the cost of article processing charges (APCs).⁹³¹ However, notwithstanding the block grant, it has been noted that the RCUK decision tree seems to lack a few branches. In fact, it is unclear what the scenario would be if the APC funds ran dry and the author wanted to publish with a journal that offers Gold OA but is set up only to accept APCs and does not offer an option that includes an embargo period.⁹³²

In order to assure maximum opportunity for re-use, the RCUK mandates that Gold OA publications must be made available using the Creative Commons Attribution (CC-BY)

⁹²⁶ See RCUK, ‘Policy on Open Access and Supporting Guidance’ (n 478).

⁹²⁷ Ibid 2.

⁹²⁸ Ibid.

⁹²⁹ Ibid 1.

⁹³⁰ Ibid 8 (noting that ‘[t]he Accepted Manuscript is the version of a journal article submitted by an author that has been accepted for publication in a journal, and that has been through a peer-review process. Peer-review is a crucial part of the quality assurance process for research, and RCUK want to ensure that all users have access to research papers that have been peer-reviewed’).

⁹³¹ See RCUK, ‘Policy on Open Access and Supporting Guidance’ (n 478).

⁹³² See Kent Anderson, The RCUK Open Access Policy is Revised – Complexity, Confusion, and Conflicting Messages Abound (*The Scholarly Kitchen*, 7 March 2013) <<http://scholarlykitchen.sspnet.org/2013/03/07/the-rcuk-open-access-policy-is-revised-complexity-confusion-and-conflicting-messages-abound>> accessed 13 July 2013.

licence.⁹³³ In the case of Green OA, however, the RCUK policy does not request that a specific licence type be used but only stipulates that the final accepted manuscript is made available without restrictions on non-commercial use.⁹³⁴ The RCUK decision to mandate the use of a CC-BY for Gold OA has raised concerns.⁹³⁵ The report has responded to those concerns by noting that the journals using CC-BY, predominantly in the STEM sector, do not report any significant problem and, in any event, RCUK will include an assessment of the impact of CC-BY in the 2014 review in order to tackle any emerging problem.⁹³⁶ In this respect, it is worth noting that the Finch Report also reported the preoccupation of publishers – and some researchers – with the use of a CC-BY licence. Finch noted that, for subscription-based publishers, re-use rights may pose a problem due to the fact that '[m]edical journal publishers, who derive a considerable part of their revenues from the sale of reprints to pharmaceutical companies, could face significant loss of income' and 'more generally, commercial re-use would allow third parties to harvest published content from repositories and present them on new platforms that would compete with the original publisher'.⁹³⁷ Again, Finch also argued that, although all publishers need to consider the extent to which current restriction on rights of use and re-use can be reduced or eliminated, while publishers of OA and hybrid journals should be able to adopt a relaxed attitude to such restrictions, '[f]or subscription-based content, however, the issues are more complex, and it would not be reasonable to expect publishers of such content to adopt a CC-BY or similar licence which would allow commercial re-use of the content they publish'.⁹³⁸

4.4.4 HEFCE

In response to Finch, and as part of the global UK OAP efforts, HEFCE has set as a goal the increase of the proportion of research outputs published OA by introducing OAP as a requirement in the post-2014 Research Excellence Framework (REF).⁹³⁹ The process of developing the HEFCE OA policy proposal is still ongoing and HEFCE launched a Consultation on Open Access in the Post-2014 REF on 24 July 2013, whose responses were due by 30

⁹³³ See RCUK, 'Policy on Open Access and Supporting Guidance' (n 478) 5.

⁹³⁴ Ibid 8 (in this case the RCUK notes that this requirement can be supported by the use of the Creative Commons Attribution-non-commercial licence (CC-BY NC); however, the Research Councils also note that ideally they would like research papers in repositories to be made available using a CC-BY licence).

⁹³⁵ Ibid 7-8.

⁹³⁶ Ibid.

⁹³⁷ See Finch Report (n 900) 87-88, 96, 110.

⁹³⁸ Ibid 110.

⁹³⁹ The Research Excellence Framework (REF) is the new system for assessing the quality of research in UK higher education institutions. See REF2014, Research Excellence Framework <<http://www.ref.ac.uk>> accessed 16 September 2013.

October 2013.⁹⁴⁰ The consultation document set out proposals for implementing an OA requirement in the post-2014 REF. The HEFCE policy proposal emphasises the requirement that compliant research outputs – whether published through the Gold OA or Green OA route – will be made available through an institutional repository. In order to meet the HEFCE OA requirements, a research output – which is defined as a journal article or conference proceedings⁹⁴¹ – should be (i) accessible through a UK Higher Education Institution (HEI) repository, upon acceptance or publication, subject to an embargo period if necessary, (ii) in the final peer-reviewed version, and (iii) in a form allowing the reader to search for and re-use content.⁹⁴² It is also worth noting that the consultation was anticipated by a HEFCE statement on implementing open access⁹⁴³ and a HEFCE Open Access Letter, which already included the core principles later transposed in the consultation proposals.⁹⁴⁴ Indeed, the HEFCE policy proposal's push for a 'pay-to-say' model has been criticised because it threatens (i) academic freedom by pressuring institutions to make decisions in order to allocate scarce APC funds, (ii) research funding by diverging it into paying for publication costs, rather than research, and (iii) academic equality and the democratic process by linking publications to the capacity to pay for APCs.⁹⁴⁵

4.5 EVALUATING THE EFFECTS OF OA MANDATE POLICIES

Two types of policies are prevalent in OA research repositories: voluntary deposit, where the decision to deposit a research article is made voluntarily by the author/researcher, and mandatory deposit, where the deposit of research articles is required by the employing institution. In the past, voluntary deposit policies have often proved inadequate to promote OA to scholarly research, and OA mandate policies have also emerged in response to

⁹⁴⁰ See Higher Education Funding Council for England, 'Consultation on Open Access in the Post-2012 Research Excellence Framework' (HEFCE, 16 July 2013) <<http://www.hefce.ac.uk/media/hefce/content/pubs/2013/201316/Consultation%20on%20open%20access%20in%20the%20post-2014%20Research%20Excellence%20Framework.pdf>> accessed 3 August 2013. See also Steven Harnad S, 'Harnad Comments on HEFCE/REF Open Access Mandate Proposal. Open access and submissions to the REF post-2014' (2013) <<http://eprints.soton.ac.uk/349893>> accessed 20 December 2013.

⁹⁴¹ Ibid 6.

⁹⁴² Ibid.

⁹⁴³ Higher Education Founding Council for England (HEFCE), 'Statement on Implementing Open Access' (2012) <<http://www.hefce.ac.uk/news/newsarchive/2012/statementonimplementingopenaccess>> accessed 16 January 2013.

⁹⁴⁴ Letter from David Sweeney, Director (Research, Innovation and Skills), HEFCE, to Universities, 'Open Access and Submissions to the Research Excellence Framework post-2014' (25 February 2013) <http://www.hefce.ac.uk/media/hefce/content/news/news/2013/open_access_letter.pdf> accessed 16 March 2013.

⁹⁴⁵ See Meera Sabaratnam and Paul Kirby, 'Open Access: HEFCE, REF2020 and the Threat to Academic Freedom' (*The Disorder of Things*, 4 December 2012) <<http://thedisorderofthings.files.wordpress.com/2012/12/open-access-hefce-and-ref2020-position-paper3.pdf>> accessed 16 January 2013.

relatively low levels of participation in self-archiving by the academic community.⁹⁴⁶ Therefore, the literature has devoted a good deal of attention to evaluating the reception and effects of OA mandate policies in the academic community. As mentioned in Section 4.4.1, careful evaluation of the effects of mandate policies has also become relevant within the debate that recent UK policies have ignited regarding which OA route would best serve public interest.

Generally, authors have found positive effects of OA mandate policies on self-archiving, although caveats have been made and many seem to seek a global long-term OA strategy. Xia and others, for example, have concluded that an OA mandate policy, by itself, will not change the practice of self-archiving. In fact, the success of an OA mandate policy in terms of compliance and full participation may be obtained 'only if the entire scholarly communications system is adjusted.'⁹⁴⁷ Additionally, the advantages of OA mandate policies will be better understood only when a comprehensive picture of their history and current practice is provided in systematic studies.⁹⁴⁸

In any event, the study by Xia and others found that comparing the effect of a mandate policy both before and after its introduction reveals that self-archiving rates increased in many repositories after the policy's implementation.⁹⁴⁹ As for the size of the repositories, a little more than half of the repositories display an increase in their content size, while about 29 per cent of the repositories have shown a decrease in their content accumulation rate after the implementation of the policy.⁹⁵⁰ Comparing two different institutions, one having a long-standing OA mandate policy and the other not, Mary Kennan found that the institution with an OA mandate policy not only has a far greater proportion of its research in its OA institutional repositories but also the academic body at that university had a much deeper understanding of issues surrounding scholarly publishing at large. Kennan concludes that '[w]ithout a mandate the OA message is ambiguous, it does not appear as if the university has unconditional support for OA or its own IR [. . .] [a]n institutional mandate or policy promoting OA signals the university's support for OA to the scholarly corpus'.⁹⁵¹ Similarly, comparing the uptake levels of all published journal articles for universities and research institutes with OA mandates and a bigger selection of universities without mandates, Gargouri and others found an average deposit rate of approximately 60 per cent for

⁹⁴⁶ See Willinsky, 'The Stratified Economics of Open Access' (n 576) 59.

⁹⁴⁷ Xia and others, 'A Review of Open Access Self-Archiving Mandate Policies' (n 844) 86.

⁹⁴⁸ Xia and others, 'A Review of Open Access Self-Archiving Mandate Policies' (n 844) 87.

⁹⁴⁹ Ibid 90.

⁹⁵⁰ Ibid 91.

⁹⁵¹ See Mary Anne Kennan, 'Learning to Share: Mandates and Open Access' (2011) 32 (4/5) Library Management 302, 302 – 318.

institutions with mandates and 15 per cent for institutions without.⁹⁵² Again, looking at researchers' behaviour in depositing research articles in open access institutional repositories, Sale has found that it takes several years for a mandatory policy to become routine, but once this has happened authors deposit less than six months after publication, or in some cases even before.⁹⁵³

This literature appears to confirm the conclusions that led Gargouri and others to reject Finch's hypothesis on the effects of Green OA, as mentioned in Section 4.4.1. In their response to Finch, Gargouri and others have also noted that stronger mandates produce stronger effects. In this regard, they have identified the University of Liège's ID/OA repository mandate as the strongest mandate model.⁹⁵⁴ The University of Liège has set up an immediate deposit/optional access mandate – meaning that deposit of the reference and full text in the repository must be immediate but access to the research output will only be granted with the author's consent and according to the rules applicable to author's rights and copyrights.⁹⁵⁵ However, the strength of this mandate resides in being linked to research performance evaluations. In fact, since 1 October 2009, only the references introduced in the Liège repository ORBi have been taken into consideration as the official list of publications accompanying any curriculum vitae in all internal evaluation procedures, including designations, promotions, grant applications, etc. The University of Liège's approach is especially relevant as it goes in the direction of integrating OA mandate policy within the mechanisms of academic career and promotion. Additionally, this approach provides indirect enforcement tools for ensuring compliance with mandate policies.

However, the appropriateness and applicability of OA mandate policies have also been questioned by the literature. These researchers found no solid evidence showing an increase in faculty awareness or an increase in self-archiving as the result of a mandate. According to

⁹⁵² Gargouri and others, 'Self-selected or Mandated' (n 798).

⁹⁵³ Arthur Sale, 'The Acquisition of Open Access Research Articles' (2006) 11(10) *First Monday* <<http://www.firstmonday.org/ojs/index.php/fm/article/view/1409/1327>> accessed 27 May 2013. See also, for additional studies finding a positive effect of OA mandate policies, Paula A Callan, 'But Wait! There's More! Using your ePrint Repository to Advance Multiple Institutional Objectives while Protecting (and Advancing) your Open Access Objectives' (5th Workshop on Innovations in Scholarly Communication (OAI5), CERN, Geneva, Switzerland, 2007) <<http://eprints.qut.edu.au/7008>> accessed 13 June 2013; Tom Cochrane and Paula A Callan, 'Making a Difference: Implementing the ePrints Mandate at QUT' (2007) 23 *OCLC Systems & Services* 262, 262-268.

⁹⁵⁴ See Gargouri and others, 'Testing the Finch Hypothesis on Green OA Mandate Ineffectiveness' (n 913) 1.

⁹⁵⁵ See ORBi, Open Repository and Bibliography, Declaration of a Strong Institutional Policy <http://orbi.ulg.ac.be/project?id=03#Declaration> accessed 23 August 2013. See also Bernard Rentier, 'Liège Mandate Definitely Immediate-Deposit/Optional-Access (or Dual Deposit/Release: IDOA/DDR)' (Open Access Archivangelism, 3 January 2009) <<http://openaccess.eprints.org/index.php?archives/502-Liege-Mandate-Definitely-Immediate-DepositOptional-Access-or-Dual-DepositRelease-IDOADDR.html>> accessed 23 August 2013.

Baker, the disagreement with OA mandate policies may be primarily rooted in a widespread concern by faculty that 'open access policies will restrict their publication opportunities'.⁹⁵⁶ Similarly, in a recent study, a survey among academic authors from a variety of Carnegie-classified doctorate universities indicated that concerns regarding self-archiving were still shared by many faculty members who were particularly concerned about copyright.⁹⁵⁷ Again, scholars' willingness to comply with a policy may not be translated into action because, as Sally Morris and Sue Thorn suggest, 'there is much more support for OA publication in theory than in practice'.⁹⁵⁸ Further, an increased rate of self-archiving in an institutional repository may be for reasons other than the adoption of a policy. For example, Xia and others have noted that, by taking a closer look at the items placed in QUT's repository, it was obvious that a few librarians were very active in the construction of the repository and, not surprisingly, those librarians deposited or encouraged the deposit of the majority of the items.⁹⁵⁹

Authors have also offered suggestions on the best way to implement OA mandate policies. Peter Suber, for example, suggests that the university provides OA to all research outputs, uses mandatory language regarding university expectations, provides incentives to use the repository and does not limit the freedom of the faculty to submit articles to favoured journals by allowing repository submission waivers for those journals that prohibit OA archiving.⁹⁶⁰ Providing a monetary incentive has been considered as an additional tool.⁹⁶¹ Suber also warns that academic freedom, in particular, may become an extremely critical issue to be dealt with in implementing OA mandate policies, especially if the Gold OA route is increasingly promoted as the standard for publicly funded research. In this respect, the concerns that Gold OA and APCs may raise are twofold. On one hand, some journals with high reputational value may not offer an OA option and academics should have total freedom to publish where they want, otherwise academic freedom may be limited.⁹⁶² On the

⁹⁵⁶ Gavin Baker, 'Open Access: Advice on Working with Faculty Senates' (2010) 71 College & Research Libraries News 1, 21–24.

⁹⁵⁷ See Ji-Hyun Kim, 'Faculty Self-Archiving: Motivations and Barriers' (2010) 61(9) Journal of the American Society for Information Science and Technology 1909.

⁹⁵⁸ Sally Morris and Sue Thorn, 'Learned Society Members and Open Access' (2009) 22(3) Learned Publishing 236.

⁹⁵⁹ See Xia and others, 'A Review of Open Access Self-Archiving Mandate Policies' (n 844) 86.

⁹⁶⁰ See Peter Suber, 'Three Principles for University Open Access Policies' (2008) 120 SPARC Open Access Newsletter <<http://www.earlham.edu/~peters/fos/newsletter/04-02-08.htm#principles>> accessed 1 June 2013 (reporting the experience with monetary incentives of the University of Minho in Portugal).

⁹⁶¹ See Miguel Ferreira et al, 'Carrots and Sticks: Some Ideas on How to Create a Successful Institutional Repository,' (2008) 14 (1/2) D-Lib Magazine <<http://www.dlib.org/dlib/january08/ferreira/01ferreira.html>> accessed 1 June 2013.

⁹⁶² Cf Robin Osborne, 'Why Open Access Makes No Sense' in Nigel Vincent and Chris Wickham (eds), *Debating Open Access* (British Academy 2013) 97-105 (hinting at the question of research freedom by noting that

other hand, limited APC resources may force universities to make decisions on which contributions should or should not receive financial support to cover APCs, thus still curtailing the academic freedom of certain authors to have their work published OA. Therefore, authors' decisions on what to publish and where to publish it may be subject to financial considerations, rather than academic.

4.6 CONCLUSIONS

Mandates, both institutional and from funding organisations, are growing apace. If this trend is confirmed in the years to come, OA, institutional repositories, and mandates will become an increasingly interdependent set of tools that will dominate the scholarly landscape and promote the accessibility and dissemination of scholarly research outputs. Whether the standard for OA mandate policies should be the Green or the Gold route is a question that will inflame the debate in future years. Critical views have been expressed on the financial sustainability of the Gold OA models and the threats that it may pose to academic freedom. Again, if unregulated APC models are implemented as dominant standards by commercial publishers, there is no assurance that future increases in APCs will not pose the same unsustainable financial constraints on academic budgets that have promoted the 'serial crisis' today. Reaching the land of OA seems indisputably a goal that will enhance democratisation and contribute to building a better society; however, the route we take to get there must be carefully planned or we may end up in a place that does not meet our expectations.

'academics [. . .] should retain the right to determine the form and location of the [research] outputs); Priest, 'Copyright and The Harvard Open Access Mandate' (n 457) 430-438 (considering whether the opt-out nature of permission mandates offends notions of authorial autonomy in copyright and arguing that it does not).

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